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All parcels and correspondence relative to the binding of back numbers of the Journal should be addressed (postage or carriage prepaid) to Messrs. BUTLER & TANNER, The Selwood Printing Works, Frome, Somerset.

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4. 1843 ..	IV. I. (i.), and II. (ii.)	47. 1886 ..	XXII. I. (xixi.) and II. (xxii.)
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9. 1848 ..	IX. I. (i.), and II. (ii.)		
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13. 1852 ..	XIII. I. (i.), and II. (ii.)	52. 1892 ..	III. I. (i.), II. (ii.), III. (iii.), and IV. (iv.)
14. 1853 ..	XIV. I. (i.), and II. (ii.)	53. 1893 ..	IV. I. (i.), II. (ii.), III. (iii.), and IV. (iv.)
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THE FOOD CAMPAIGN OF 1916-18.

THE war of 1914-18 was fought on a colossal scale. It was a death-grapple not merely of nations, but of groups of nations. As the struggle swayed backwards and forwards, the danger-spot continually shifted. Now men, now munitions, now money, now tonnage, became the most pressing need for the moment. But, during the last two years of the conflict, the question of food daily increased in urgency. The war threatened to turn on endurance. Final victory might well rest with the nation which could command the last sack of wheat or the last hundred-weight of meat. In such circumstances, national necessities inevitably overruled agricultural expediencies at every turn. To meet those varying necessities as they successively arose, an elaborate organisation of the farming industry was established and embodied in an Act of Parliament. The last harvest to which the Corn Production Act of 1917 would have applied was that of 1922. But in 1920—eighteen months after the conclusion of the Armistice—the Government decided to prolong the life of the war machinery, and to apply it, with considerable modifications, to carrying out a peace policy of agricultural reconstruction. That decision is now reversed. The Agriculture Act of 1920 has been in its main features scrapped, and the peace policy which it embodied is abandoned. The ground is thus cleared. The war organisation of the farming industry can be discussed without reference to current politics. Its successes, its failures, and its lessons, can now be reviewed and recorded without risk of misunderstanding. Should similar necessities ever arise in the future, our national action will, it is hoped, be guided, as well in adoption as in avoidance, by the experience gained in 1916-18. The most competent judges of the food production campaign

are the members of the Royal Agricultural Society, and in its *Journal* the story can be most fittingly told. I therefore accept the invitation of the Editor to try and sketch the main features of the history.

The last two months of 1916 were marked by a serious increase in the submarine menace. It was a foretaste of worse to come. On January 31 in the following year, the German Government presented a note to the United States Ambassador at Berlin that from February 1 it proposed to abandon all restrictions on the use of its fighting weapons at sea. Thus Germany entered on her unlimited U-boat campaign, designed to destroy the transport facilities of the Allies and cut off all sea-borne supplies from Great Britain, France and Italy. The blow was well timed. It caught us after a poor harvest. At the end of March, 1917, our stocks of wheat and flour were low. We were faced with a serious shortage of potatoes. Our purchases of wheat in Australia were inaccessible. In America, though fortunately she had a big carry-over from the phenomenal crop of 1915, the harvest of 1916 had fallen considerably below the average of late years. Two and a half years of war, the drain on manpower, and the loss of territory were telling severely on the resources of our Allies. France and Italy showed ominous signs of a decreased capacity for production. Both in Great Britain and in the United States the area of winter-sown wheat was known to be reduced. No substantial addition to our home-grown supplies of bread-stuffs could be expected before September, 1918. Moreover, Germany was convinced that British agriculture, for several years before the war, had become so depressed and enfeebled that it was incapable of any serious effort to increase production. She had, therefore, high hopes of the success of her submarine campaign. To give it time to take effect was one of the motives which led her, in the early part of 1917, to retire to a depth of thirty miles on a hundred miles of the Western Front. So confident was she of its speedy result that, in order to carry it out completely, she was ready to risk the hostility of America. On her estimate of time, the United States could not intervene effectively in the war till the world-tonnage had been so reduced as to make it impossible for the Allies to continue the struggle. During the first few months, the campaign succeeded on so startling a scale that Germany might well be hopeful of its final triumph. The rate of destruction of ocean-going tonnage more than trebled: it reached its highest point in March and April, 1917. In the last fortnight of the latter month, seventy-three ocean-going British ships were destroyed, as compared with a monthly average of 24 in 1916. On that scale of destruction, an outward-bound ship had only a 3 to 1 chance of returning safely with her cargo. In the three

months April, May, June, 1917, the British Empire lost tonnage to the amount of 1,270,513 gross tons in all classes of vessels, a figure which exceeded its total loss in the whole of the previous year.

• In December, 1916, even without the opening of the unlimited submarine campaign, it had become absolutely necessary to take stock of the food situation. Our Navy and Merchant Service might or might not be able to overcome the new danger. German science might strengthen the attack: British nautical skill and inventiveness might counter it successfully. No one could predict with absolute certainty whether the attack or the defence would triumph. In any case, a further reduction in our limited tonnage and a more drastic restriction of our sea-borne supplies were inevitable. The strain on the carrying capacity of shipping was already intensely severe. When America came into the war, the pressure became still more extreme. The war was certain to be prolonged, and food-production in Great Britain—still more among our Allies—showed alarming symptoms of decline. In these circumstances, the Government decided that a vigorous effort must at once be made to maintain and, if possible, increase the supplies of home-grown food in the United Kingdom. In this country the outlook was unfavourable. A poor corn-harvest, a bad potato-crop, an adverse season for autumn ploughing and sowing, a severe and, as it proved, protracted winter, were not calculated to raise the spirits of farmers. They were disheartened by the loss of labour, and discouraged by the uncertainty whether they would be able to retain any men of military age. Out of the rural population permanently employed on the land in England and Wales, some 250,000 had been already recruited for the Army. Others had left, and were daily leaving, the farms for work in munition factories, camp-building or other national occupations. Skilled ploughmen were already scarce. Half the steam tackle sets were out of action, either from loss of drivers or from defective parts. Repairs of all kinds were difficult of execution. Blacksmiths, wheelwrights, saddlers, harness-makers were serving in such numbers that wide districts were almost denuded of these indispensable industries. In October, 1917, inquiry showed that, in twenty-six administrative counties, the shops of 515 blacksmiths and 216 wheelwrights were closed, and that those of 706 blacksmiths and 428 wheelwrights were understaffed. Some of the farm horses were unshod; others had been commandeered. Threshing machines had been taken over for military purposes. The staffs of seed-firms were depleted. Manufacturers of implements, agricultural machinery and fertilisers were employed in making munitions of war. The very first cut into imported produce which was necessitated by the

loss of tonnage reduced the normal imports of raw fruits and vegetables by 52,000 tons a month, and of food-stuffs for man and beast at a monthly rate of 77,000 tons. It also restricted the import of the ingredients of fertilisers, such as phosphatic rock (North Africa) and iron pyrites (Spain). The immense demand for munitions of war told heavily on the available supply of sulphate of ammonia and sulphuric acid. Manufacturers of superphosphates who had sulphuric acid had no phosphatic rock and *vice versa*. Potash from the German sources of Stassfurt had disappeared from our markets with the declaration of war; the attempt to obtain supplies from Abyssinia failed. Shipping was not available for the transport of Chilean nitrates. As soon as the export trade in basic slag was stopped, much larger quantities were available for home consumption; but we were short of grinding machines, and of the men to work them. Lime-kilns were closed, because the lime-burners were at the front. All these requisites, from labour to fertilisers, were necessities of arable cultivation. Without them it seemed impossible that the area under the plough could be maintained; still less could it be reasonably expected to expand. At the same time, ordinary methods of transacting business were interrupted; normal channels of supply were blocked; internal transport facilities were strictly curtailed; agriculture was in a great degree powerless to help itself; farmers as individuals seemed too crippled to make an extra effort.

Agriculture was the last industry to receive official aid. It found what might be considered to be its territory already occupied by great Departments of State, strongly backed by public opinion, and powerfully organised to discharge duties which might conflict with the claims of the latest comer. Reinforcements were urgently needed for the Army: but to the land labour was equally essential. High prices would stimulate the production of food; but in the interests of consumers the cost of necessities had to be strictly controlled. Imported food-stuffs and fertilisers might be vital to the meat supply and to arable cultivation; but the first call on tonnage lay with the military authorities and the Ministry of Munitions. Without soldiers and munitions the war could not be ended; without food it could not be prolonged. Before agriculture could obtain a hearing, it had not only to arouse farming opinion, but to make the urgency of its needs felt by the Press, by politicians and by the people. Without the warm sympathy and courageous optimism of the Prime Minister, the task could not have been accomplished. Memory is short-lived. But no one who has before him the documentary evidence of the day will say that the foregoing picture is darkened with exaggerated gloom. In the winter of 1916-17, the cry of "Back to the Seventies"

sounded like the words of an idle dreamer, talking in his sleep. Yet, eighteen months later, the dream seemed likely to become an accomplished fact. A corn harvest, which promised to equal that of 1868, was actually in sight. It was not all gain. On this point more will be said later. Two wet months damaged the crop in the North of England. But, even when the losses of that disastrous September and October and the displacement of pasture had been liberally discounted, the net results were considerable. They showed, according to the official calculation, that, as compared with the average of the peace years 1904-13, the farmers of England and Wales had added to the home-grown output of human food a quantity equivalent to a saving of 2,300,000 tons of shipping space. Adopting the estimate that 5,000 tons of cargo are equivalent to 1,000 soldiers and their equipment, farmers had set free sufficient tonnage to bring to Europe nearly half a million soldiers from the United States.

The campaign for increased food production opened with a speech from the President of the Board on December 20, 1916, at a meeting in London of the Federation of War Agricultural Committees, with Sir Mark Collet in the chair. It was followed up by two circular letters from the Board of December 28 and 29. The Board proceeded on the lines of the recommendations contained in the Interim Report of the Milner Committee, July 17, 1915. It recognised from the first that the willing co-operation of farmers in the movement was essential to success, and that, without agricultural opinion behind the effort, it was foredoomed to failure. Apart from general policy, there must be no farming from Whitehall. On the other hand, the Board knew that the need was urgent, and that it might prove necessary to force its plans on a reluctant minority of farmers. Thus, the three main features of the movement were the improvement and extension of arable cultivation, with spade as well as plough; decentralisation; and drastic powers of compulsion which could only be justifiable or tolerable in a war emergency.

The plough policy was admittedly dictated by the Board. But, in its general principles, it was imposed on the agricultural industry by national necessities. The interruption of sea-borne trade and the strain upon the reduced tonnage threatened our supplies of food from three special directions. Our imports of grain, of concentrated cattle-food, and of artificial fertilisers were in jeopardy. The three danger-spots were, therefore, bread-stuffs for human food, winter milk and winter meat, and the maintenance or restoration of the fertility of exhausted arable land. Increased output might be obtained by grading up the average cultivation of the existing arable acreage, and by the utilisation of derelict land. But no results commensurate with

national needs could be expected from these sources only. To meet the large war demands for increased corn and winter fodder, the existing area under the plough was inadequate, and it was impossible to "keep off the grass," because the release of its stored-up fertility dispensed with the need of fertilisers. The problem was that of providing for the subsistence of the nation. Given the circumstances, it is difficult to suggest any other policy than the extension of the arable acreage. Every farmer is aware that tillage more than trebles the output of human food. In 1870 the land fed 26 million people. In 1914 it fed 16 millions. The reason for the decline was the restricted area under the plough. Summer milk and summer meat off grass were never in serious danger; the highest demand made by the ploughing programmes of 1917-18 did not exceed one-eighth of the existing area of permanent grass. According to the Board's calculation, there was meat in sight for at least two years and a sufficient, if reduced, yield of milk.

The general policy then was to secure the adequate cultivation and cropping of arable land, and to extend its area by ploughing up suitable grass. It could only be carried out by decentralisation. Several hundreds of thousands of separate businesses could not be treated, like factories, as controlled establishments. Local farmers were the best judges, in their own districts, of insufficient cultivation, and of the most suitable land to be brought under the plough. An organisation already existed which might be adapted and utilised for the purpose. On the recommendation of the Milner Committee of 1915, of which the President of the Board was a member, War Agricultural Committees had been set up in most of the counties. Where they existed, their activity and efficiency varied greatly. In almost all cases, they were unwieldy bodies for any purposes except those of consultation and advice. To carry out the new policy, small executive committees were necessary. They were formed by asking the War Agricultural Committees to appoint not more than seven members, who, together with such additional appointments as the Board might make, constituted the County Agricultural Executive Committees. These smaller bodies, established in each County or County Division, became the local agents of the Board. To them were delegated many of the powers which it exercised under the Defence of the Realm Regulations, and those which were afterwards retained in the Corn Production Act of 1917. In the final shape of the local organisation, the County Executives were assisted by District Committees, and, in some cases, by Parish Representatives. Each of the sixty-one Executives was provided with the necessary funds for staff and office expenses, and, as their work developed, they formed Sub-Committees for such branches as

Survey, Cultivation, Supplies, Labour, Machinery, Horticulture, and Finance. During 1918 they were also entrusted with the responsibility of supplying recruits for the Army, and with protecting agriculturists who were not to be called up for military service. Their discharge of these delicate duties was warmly commended by the recruiting authorities. The members of the Executive Committees, the majority of whom were farmers actively engaged in business, gave their time, knowledge and experience without pay or reward. They brought to their work a judgment and a patriotic energy that were beyond all praise. Their most difficult and invidious task was performed with a tact and fairness which reduced the inevitable friction to a minimum. The Counties were grouped into twenty-one districts, to each of which a District Commissioner was appointed by the Board. An *ex-officio* member of the County Executive Committees in his district, he served as a link between the Committees and head-quarters. Acting under the District Commissioners were thirty-six Sub-Commissioners, whose special duties were to superintend the work of District Committees. By means of this net-work of local organisation, each parish was, as it were, connected with the Food Production Department, which represented the Board at Whitehall.

The powers of control were extremely drastic and far-reaching. The first Cultivation of Lands Order, which vested in the Executive Committees many of the powers of the Board, was sealed on January 18, 1917. It was at once circulated to the Committees, with explanatory instructions for their guidance in its administration. The primary object which the Committees were directed to keep before them was to see that farmers were assisted and encouraged to cultivate their existing arable land, so as to secure the greatest possible output of essential food. Where grass-land could be more profitably used in the national interest as arable, they were empowered to require it to be broken up, or to break it up themselves. Schemes for the cultivation of derelict or waste land were only to be undertaken when the Committees were satisfied that the labour and machinery at their disposal could not be more advantageously applied to the land already under cultivation. The Committees were empowered to serve notices upon an occupier, requiring him to cultivate his land as they might direct in the interest of increased food production, or specifying the grass fields to be broken up. In order to secure prompt action, no appeal was allowed. Failure to comply with notices rendered the occupier liable to fine or imprisonment. Committees were further empowered to take possession of the whole or part of a farm, and either cultivate it themselves, or let it to a new tenant. The Board retained in its own hands the power to determine, or

authorise an owner to determine, forthwith the tenancy of a badly cultivated farm.

It was too late in the farming season to attempt any considerable addition to arable land for the harvest of 1917. But Committees were asked to make a rapid survey of their districts in order to report what might be done in the spring. For the harvest of 1918 they were requested to make a more detailed and careful survey. They were also promised that, in the early summer, *quodlibet* of the additional area of food crops should be furnished, showing the arable acreage which the Government aimed at securing in each County. By the end of January, 1917, most of the Executive Committees were established. Some had already made good progress with the preliminary survey, and were taking steps to stimulate cultivation. On January 29, for example, the West Sussex Committee reported on the cultivation of 123,000 acres, stating that 95,000 acres were satisfactory, 28,000 unsatisfactory, and 34 derelict, and that 4,379 acres of permanent pasture were suitable for the plough, and could be spared for the growth of oats or potatoes. In these preliminary surveys valuable and unpaid assistance was given by large numbers of professional men.

Other steps were taken to complete the skeleton of the necessary organisation. The Board itself was not equipped to help the industry to increase production. In the past, its range of duties had been relatively restricted. To meet the new needs, the Food Production Department was constituted January 1, 1917, as a new branch of the Board, with the novel functions of distributing labour, machinery and supplies of feeding stuffs, fertilisers and other requisites, and of making arrangements necessary to help farmers to cultivate their land to the best advantage. The Department was at first under the direction of Mr. (now Sir Thomas) Middleton. After February 19, 1917, it was placed in the charge of Sir Arthur (now Lord) Lee. Magnificently organised, it became the pivot of the whole movement. Its services to the agricultural industry were immense and many-sided. The whole was under the direction of Lord Lee. From the first he recognised the magnitude and complexity of the task. By his organising power he perfected the machine, and by his vigour and energy made it a live force, full of enthusiasm and self-devotion. The Department worked in seven Divisions. Local organisation was in the hands of Mr. (now Sir Francis) Floud; the Technical Division was under Sir Thomas Middleton, Labour under Lord Goschen, Women under Miss (now Dame) Meriel Talbot, Cultivation under Sir Sothern Holland, Supplies under Mr. (now Sir Lawrence) Weaver, Horticulture, including allotments, under Professor Keeble. Through this Department the needs of the industry were, as far as possible, met, and difficult and often

protracted negotiations with other Ministries were conducted. Not the least of the difficulties was that of the accommodation of the staff. No single building being available, the work was distributed in thirteen separate premises at a considerable distance from one another. The President, besides being in daily touch with the Director-General, took the chair at weekly conferences with the heads of divisions and branches, and was responsible for the actions of the Department to the Cabinet and to Parliament. For all scientific questions bearing on food production, a highly skilled staff of technical experts, drawn from Research Institutes and Agricultural Colleges, was formed at the end of January, 1917, with Mr. F. D. Acland as Chairman. To this Committee were referred the numerous points requiring scientific investigation which arose in the course of the campaign. Finally, for the personal assistance of the President in practical questions, and in the bearing of Schemes and Orders on farm work in different parts of the country, an Advisory Committee was established. It met fortnightly for the first eighteen months of the campaign, and rendered invaluable help. In July, 1918, to the regret and loss of the President, it was broken up, when, with the support of the agricultural industry, the Central Agricultural Advisory Council was set up by the Food Controller. The farming members of the President's Committee were Sir Walter Berry and Messrs. S. W. Farmer, Samuel Kidner, A. Moscrop, H. Padwick, R. G. Patterson, George Rea, Professor W. Somerville, and the Hon. Edward Strutt.

The position of transport and of food supplies compelled the Board to make light of difficulties. In many respects, history was repeating itself. With contrasts as well as parallels, the situation of 1801-15 was reproduced. To our ancestors, struggling in the throes of the Napoleonic War, a paramount consideration was the provision of bread. Whatever could be done to bring in corn from abroad, was done. The results were meagre. From 1801 to 1815 we only succeeded in obtaining an annual average supply of 600,000 quarters of wheat. The bread of 14 millions of people in 1801, and in 1815 of 18 millions, depended on the weather and the efforts of agriculturists at home. In spite of an exceptional series of indifferent harvests, the prodigious efforts of farmers averted actual famine, and even, in the one favourable season (1813), produced a surplus which was carried over to the two following years. To a partial extent the position seemed likely to be repeated in 1917 and 1918. At both periods, the way of safety lay in increased production on a larger arable acreage. But in several respects the problem was simpler during the French War. Our ancestors were better off for agricultural labour; the land was never so depleted of skilled workers as it was in the later struggle. At both periods, it was necessary to

save, as well as to grow, more food, and similar measures were taken to enforce economy. But in 1801 public opinion was ready-made to help. In 1917 it had to be instructed and created. It was not only that the standard of living had been raised, and that the country might well have revolted against hardships to which our ancestors were bred and inured. At the time of the French wars, men, women and children knew from experience the need of "eating within their tether," as well as their dependence on the weather for a scarcity or sufficiency of bread. In the German war, a generation had grown up, which had never realised the importance of home-grown food, and could not conceive the possibility of their exclusion from foreign markets, in one or more of which the harvests had been abundant. Still more striking is a difference, which illustrates the profound change of social and political conditions and thought in the twentieth century. It is the care that, in the recent war, was taken of consumers. Our ancestors attempted neither rationing nor regulation of prices. They relied on the high cost of food to enforce economy and stimulate production. There was no restriction of producers' profits in the interests of consumers. The incentive of high gains spurred agriculturists to gigantic efforts. But, in the German war, the appeal was as much to the patriotism as to the pocket of farmers. In the interests of consumers flat maximum prices were fixed for agricultural produce; the 4-lb. loaf was stabilised at 9d., partly at the expense of farmers whose home-grown wheat was taken at lower prices than were paid to foreign producers; the best and worst qualities of home-grown meat were sold at the same price, in order that the long and the short purses might in this respect be on an equality. That the principle on which prices were regulated was wise will not be disputed. But it did not make the problem of increasing production more easy of solution. One of the sharpest spur to exertion was blunted.

It is enough to indicate generally the interesting parallels and contrasts between England's position in the French and in the German wars. Other points of resemblance or of difference will probably suggest themselves in the detailed story of the recent movement to increase supplies of home-grown food. In the months of January and February, 1917, numerous meetings were held in different parts of the country, at which the Board's plan was explained to farmers. It met with as good a reception as could be expected. The plough policy imposed some real sacrifices upon both landowners and farmers. The fact was frankly recognised. It was not a question whether a better or an easier livelihood was to be made from feeding stock on grass or from the crops grown on arable land. The only question was by which method of husbandry the largest number of mouths

could be fed—and to that there was but one answer. But the agricultural community did not, and indeed could not, at first realise the full gravity of the situation. In effect they said: "Give us the men and the fertilisers, and we will raise the food." Off those terms they were willing and eager to do their utmost. But those were exactly the conditions which could not be satisfied. In many directions farmers saw practical difficulties. Above all, they felt three uncertainties which sapped their confidence. The first was the fear of losing the scanty labour still on the land. The calling up in January, 1917, of 30,000 agricultural workers seemed to threaten worse things to come. There had been no method in the early stages of volunteering or recruiting. In some cases farms had been stripped of their skilled labour, and the call had told more heavily on some counties than on others. The feeling was strongly and almost universally expressed that, unless the labour situation was improved, production could not even be maintained at its present level. The second was the fear of the action of the Food Controller in fixing agricultural prices. From the nature of his duties farmers were suspicious that he would necessarily incline to favour consumers at the expense of producers. The third was the dread of a rapid fall of prices at the close of the war. To be caught, when the slump came, with a large arable area might spell ruin. Thousands realised the risk from actual experience of the past; to all, it was the nightmare of the future. On the other hand, farmers knew that they could double their output, if they were enabled to work on the same conditions as Munition Factories, with unlimited labour, with unrestricted prices for their produce, with abundant supplies of the raw materials of their industry, with every form of priority, and with protection for their men. But, for anything like this favourable position, agriculture was two years too late. The nation was now too far advanced towards exhaustion in manpower, tonnage and finance—apart from the danger of leaving the market for necessities of life uncontrolled—to allow the remotest approach to those conditions. The task that farmers were asked to undertake was totally different. Agricultural workers who had become efficient soldiers could not be permanently released from the front. Even the skilled labour still retained on farms remained there subject to the uncertainties of the paramount requirements of military service. Farmers' prices must be controlled in the interests of consumers. Their demands on the carrying capacity of our shipping for feeding-stuffs or fertilisers, must rank behind the transport of men and material for military exigencies. The only security which could be given was that, if they grew wheat or oats after the passing of the Corn Production Act of 1917, the nation would guarantee

them, not profits, but safety from loss. It was admittedly cold encouragement, though it did protect farmers from the devastating break in prices which had ruined thousands in the previous century. With justice they complained that in the "nineties" the nation had eaten its cheap food without bestowing a thought on the widespread ruin which it brought on the agricultural community ; but, as soon as the fiscal system told in favour of home producers, it clamoured for control of prices.

It was, however, increasingly evident that, in the interest of farmers themselves, the threatened decline in food production must be arrested. Were it allowed to continue, agriculture would not be worth considering ; it would sink into the class of non-essential industries, and its man-power would be treated as a reserve on which the Army would draw at will with the full approval of the nation. If the output of food decreased, the men were of more immediate use in the camp than on the land. But, if the farming industry pulled its weight in the national effort, if farmers could turn the threatened decline into a great advance, relieve tonnage and increase food supplies, public opinion might be enlisted in their support. In the one direction lay the complete ruin of the industry ; in the other, its modified prosperity. But, as has already been stated, farmers had daily become more powerless as individuals to help themselves, or to carry on their business on the old independent lines. Neither the Board nor its newly created Food Production Department was ever in a position to make unconditional promises of help in respect of such agricultural requisites as labour, machinery, feeding-stuffs and fertilisers, petrol and paraffin. All these necessities were already controlled by other Departments in other national interests. Thus, the War Office had the last word in the supply of all forms of military labour and of German prisoners. Interned aliens depended on the Home Office. Civilian labour was controlled by the Minister of National Service. The only independent source of labour supply was that of women. The Women's Branch was set up by the Board in January, 1917, officered entirely by women, and placed under the charge of Miss Meriel Talbot. Its duties were to increase the number of part-time village workers on the land, and to raise, train and equip a Women's Land Army, willing to go anywhere and devote their whole time to agricultural work. The supply of machinery and implements, home-made or imported, rested with the Ministry of Munitions, on whom the Board indented for its needs. The supply of petrol and paraffin was in the hands of the Petrol Committee. Feeding-stuffs were under the control of the Ministry of Food. Fertilisers belonged, at first, to the Ministry of Food, afterwards to the Ministry of Munitions, though in practice the actual distribution

of the home-produced supply was ultimately controlled by the Supplies Division of the Food Production Department on behalf of the Board. The prices of wool, it may be added, as well as those of hay and straw, for military use were regulated by the War Office. Apart from the rapid fluctuations in the overruling necessities of national needs, it is obvious from the enumeration of controlling bodies that the Board was never able to give to farmers those absolute assurances of supply that they not unreasonably demanded.

The great difficulty, which stared the campaign in the face wherever it turned, was the regulation of prices. Every article of food was regulated by the Food Controller, subject only to consultation with the President of the Board of Agriculture. No one had had any previous experience of the difficulties of fixing prices. No useful sets of figures were available for estimating costs of production. In normal times, varying rates, determined by the play of local markets, make the necessary adjustment between district and district. Now, flat rates had to be fixed, and what was one farmer's meat was another's poison. One man might get too much, another too little. Every one knows, for example, that the cost of producing a quarter of wheat differs not only in each county, but on nearly every farm, and on nearly every field. The outstanding question which persistently recurred was, how far prices should be regulated to stimulate production or in the interests of consumption. The nation wanted all the food it could get; but farmers could only produce as much as they could afford. One Food Controller might say: "Produce the stuff and I will see you paid." His successor might say: "Consumers can only pay so much, and that must be the producer's price." By agriculturists, it was strongly urged that the President of the Board of Agriculture should also hold the office of Food Controller. That was the system adopted in France. But no comparison between the two countries is possible. In France, one-half of the population are producers, and the Minister administers agriculture for the whole country. It must be admitted that the complete separation of the two offices led to misunderstandings on the part of the agricultural community which impaired the influence of the Board. Heart-burning is inseparable from price-fixing. It was annoying and sometimes unintelligible to farmers to find prices cut down of all that they had to sell: it was still more irritating to find prices rising of all that they had to buy. At a later stage, the Government subsidy on bread became a burning question. The price paid for wheat to home-producers was sometimes less by two-fifths than that paid for foreign bread-stuffs. Every quarter grown at home reduced the expenditure abroad, and the burden of the taxpayer was relieved, at the

expense of the British farmer, by a sum which in the years 1917-20 exceeded £30,000,000. At the same time the prices for home-grown corn and their relation to prices of other agricultural produce were discouraging to the plough policy. Farmers were able to make much larger profits on meat and milk produced on grass than they could obtain from corn grown on arable land. On the other hand, it may be very strongly urged that consumers would not have tolerated the regulation of prices by the representative of producers and that farmers obtained from the Food Controller a higher general range of prices than the public would have accepted if they had been fixed by the Board of Agriculture alone. But, in theory, and occasionally, perhaps, in practice, farmers suffered. What was still more unfortunate was that they thought themselves unfairly treated. It was obvious that a Food Controller, with nine-tenths of the public behind him, could afford to ignore the claims, however persistently they might be urged, of the official representative of the remaining tenth; the louder producers squealed, the louder consumers applauded. The opportunity was undeniably there. But Lord Rhondda was too big a man to yield to the obvious temptation. He was genuinely anxious to fix prices at the exact point which yielded, in all the circumstances, a reasonable profit to farmers without imposing too great a burden on consumers. In any future emergency, however, the position should not be allowed to recur. The regulation of prices, necessary though it undoubtedly was, and of incalculable benefit to the community, proved the great hindrance to increased production. Possibly, a solution on the lines urged by the Board of Agriculture at the time would have been the fairest. The suggestion was that the evidence bearing on the price of any article of food should be sifted by a joint Committee of the Board of Trade, the Boards of Agriculture for England, Scotland and Ireland, and the Food Control, and that, on their report, the price should be fixed by the Presidents of the Boards of Trade and of Agriculture and the Food Controller, and published in their joint names. If it ever again becomes necessary to fix prices, we shall in one respect be better equipped. To meet future emergencies, figures of costs of production, extending over a wide range of land and seasons, will have been analysed and tabulated, and scales of parity showing the price-relationship of such articles of agricultural produce as meat, milk and its products, corn and hay will have been constructed by the Institute of Research in Rural Economics under Mr. Orwin which has been established at Oxford for these and other purposes.

Another difficulty which threatened the campaign was the apathy of public opinion. For years the national importance of agriculture at home had been ignored. The lost ground had

to be recovered. With all the facts and figures constantly before them, it was easy for the Government to realise the necessity of increasing the production of home-grown food. Without the fullest information, it was harder to convince public and farming opinion of the gravity of the situation. The Press gave most valuable help. But general statements, however ably made, do not arrest attention. It is the definite facts that carry conviction. A chart, posted in every town and village, showing from day to day the fluctuations in our stocks of food, and the gradual shrinkage in the carrying capacity of shipping, would have forced the nation to appreciate its danger. Such a course was, for many obvious reasons, so inadvisable as to be impossible. For many months, neither consumers nor producers realised the fact and the consequences of the interruption of our sea-borne supplies. In the quiet backwaters of country districts the surface was unruffled, while, on the other side of the hill, the stream of national life flowed in a seething torrent of national effort. Consumers had been so long accustomed to send, as it were, round the corner, and buy from the foreigner whatever bread and meat were required, that they could not grasp the new situation. The tonnage was not there to bring home their purchases. Bewildered by the novelty, they abused the British farmer, forgetting that their insistence on cheap food had elbowed him out of the market. On the other hand, producers were equally slow to realise the truth, although every safe opportunity was taken to make known telling facts. For this purpose the President's Advisory Committee was always useful. It was also possible to speak with some degree of openness at private conferences with chairmen, commissioners and officials of Executive Committees in London, or at the private meetings of the Committees themselves which preceded public meetings in the Counties. But the process was necessarily slow. Warnings of the coming scarcity of foreign oats, barley, maize, oil seeds and cake, received little attention, or were met to the end of the campaign by the question, "Why not bring them in from America?" Our meat supplies in the winter of 1917-18 illustrate the difficulty of bringing home the truth to either consumers or producers. It is a remarkable fact that, in the last four months of 1917, consumers ate more meat than they had ever eaten at that period in any preceding year of war or peace. In the case of producers, there were exceptional conditions arising out of the meat prices fixed by the Food Controller and of their anxiety to market their cattle before the final fall in price. Even then, the neglect of warnings was noteworthy. In April, 1917, notice of the coming scarcity of concentrated feeding-stuffs had been sent to farmers, with a special appeal from the President to economise in their

use. They were told that, in the circumstances, prime beef or early lamb were unpatriotic luxuries, that Fat Stock Shows should be cancelled, and all animals shown in store condition. They were asked to enlist the help of their stockmen in the necessary economy by posting notices, which were supplied, in the cattle-feeding sheds. Yet, in the four months from September to December they purchased a larger quantity of concentrated food than they had ever before fed to their cattle at the corresponding period in previous years. The result was that in January, 1918, our meat supply stood in this position. Foreign imports of beef and mutton for civilian supply had almost entirely ceased. The unprecedented demand for meat had severely reduced the number of cattle at home which were capable of being ripened for slaughter; our barley was needed for human food; offals, owing to closer milling, had lost two-thirds of their feeding value; the foreign imports on which feeders and dairymen mainly relied for winter meat and winter milk were cut down to the bone; for the next eight months there was only sufficient concentrated food in sight to feed a reduced allowance to working horses, transport as well as farm, and cows in milk. There was nothing over for fattening cattle, sheep, lambs, pigs or poultry. The actual facts and figures of the position into which we were rapidly passing were embodied in a statement drawn up by the Board for publication, in December, 1917. But the paper was withdrawn, because it was decided by the Government to be too alarming for the public at home, and too encouraging for our enemies abroad. It was not the least of the advantages of the rationing system of 1918 that it at last convinced most members of the community that they were indeed inhabitants of "a beleaguered city."

The chief difficulties which impeded the effort to increase food production were, in the circumstances, inevitable. They remained throughout the campaign. They are not enumerated as grievances; they are mentioned as touchstones of achievement. Never at any time did farmers command an adequate supply of skilled labour; nor, after 1917, had they, owing to the rising costs of production, the stimulus of high prices for the staple products of their industry. Never at any time had the Board a deciding voice in fixing prices or in providing the requisites of production. For all essentials of their industry, agriculturists were dependent on Ministries whose official duties might sometimes clash with farming interests. But farmers were not the only persons who were called on to make "bricks without straw." Agriculture was but one corner of a vast field of united effort—an item in a huge reorganisation of industrial and economic life for the purposes of war. In so critical a stage of the struggle, it was idle to cry for the moon. The

task set to the industry, in the national interest and need, was to produce, in the shortest possible time, the largest possible quantity of the plainest and most indispensable human food. As to the means of fulfilling the task, if the ideal "bests" were impracticable, the next "bests" available must be made to do. It was in this spirit that farmers learned to tackle their difficulties.

In the attempt to increase production two periods must be distinguished. The first comprises the preparations for the harvest of 1917; the second those for the harvest of 1918. As will be shown later, no programme was adopted for the harvest of 1919.

The early months of 1917 were the most trying period of the whole campaign. The labour situation, which, as time went on, gradually improved, was then at its worst. All the essential requisites of agriculture were urgently needed; but every day revealed more clearly the complete interruption of the ordinary channels of supply. It was easy to create a paper organisation capable of helping the industry in these novel conditions; time was needed to give it reality and life. The County Executive Committees had not mastered their work; the Food Production Department was not fully manned. Naturally enough, the Board's inability to satisfy the immediate wants of farmers provoked a storm of criticism. But, on the whole, the campaign opened with the support of the Press and the goodwill of the agricultural community.

In the first weeks of the year, the courage of farmers was severely tested. Short-handed as they already were, they were urged to grow more food. Almost in the same breath they were told that their scanty supply of skilled labour must be still further cut down. At the beginning of 1917 the needs of the Army were extremely urgent. In order to take the offensive in the spring, and to co-operate efficiently with the French, larger forces, both in the field and in reserve, were essential. Recruiting had proceeded so slowly that the Army Council were unable, without heavy calls on the man-power at home, to make good their promises to our Commander-in-Chief, or to fulfil their engagements with the French. According to official estimates, there still remained on the farms in Great Britain 177,000 men of military age. From these, and similar sources in other industries, recruits had to be drawn if the spring offensive was to be undertaken. On January 16, 1917, 30,000 men, out of the 60,000 whom the War Office had claimed in the preceding October, were called up from the land. No explanation of the urgency of the military need could, of course, be given to the public. But whatever was possible was done to ease the labour situation thus created. In exchange for the skilled sturdy men with whom they were accustomed to work, farmers were offered strangers belonging to the C III category, unaccus-

tomed to agricultural work, and physically unfitted for active service in the Army. These men, 11,500 in number, were formed into Agricultural Companies, and, subject to military exigencies, made available for agriculture throughout the war. At first sight the material was unpromising. Farmers grumbled that they were asked to keep infirmaries. But they responded gallantly to the appeal that they should become "the Kitchens of a new agricultural army." They were rewarded for their instruction. Many of the men improved in physique and developed unexpected capacities. Besides these Agricultural Companies, the Army Council released 12,500 men from the Home Defence Force on furlough up to April 30. Early in March the men belonging to both these classes began to arrive at the Distribution Centres, from which they were dispatched to those farmers who applied for labour through the County Executive Committees. Not more than 3,000 out of the total number of 24,000 proved to have had any experience of ploughing. On March 12, therefore, the military authorities ordered all skilled ploughmen in the United Kingdom to return to their depots on agricultural furlough up to April 30. These were the stamp of men required. By the end of the first week in April, 40,000 men of the three classes were at work on the land. Unfortunately the season was unusually late. Though the Army Council extended the furlough in all cases till May 10, 18,000 of the skilled ploughmen who belonged to category A, were recalled before the tillage was completed. Urgent requests were made for their retention. But the Army Council could not spare a single "A" man. Owing to the incomplete success of the French operations on the Aisne, our April offensive had to be renewed in May. A further attack on the Flanders front was also projected for July. In the case of the other men, the furlough was extended to July 25. In other directions the military authorities did what they could to help the industry. They sought out, for instance, and released a considerable number of steam-tackle men for whom application was made in January, and, later on, of shepherds and shearers, though the recovery of any of the rural handcraftsmen proved more difficult. They also gave special assistance at the hay and corn harvests. The appeal of the National Service Department for volunteers for this work proved unsuccessful. But the military authorities, though crippled by the necessity of maintaining a mobile Home Defence Force, came to the rescue. Seventeen thousand additional men began to move into the Distribution Centres in June, 1917. This portion of the story has been told in some detail, because it serves to illustrate the interdependence of the various parts of the national organisation for purposes of war.

Most of the labour supplied by the military authorities was

inexperienced. It was also temporary. Other sources were explored to increase the permanent staff. Old-age pensioners in rural districts, by arrangements made with the Local Government Board in January, 1917, were allowed to earn wages without forfeiting their pensions. Ultimately (April, 1918) the Treasury sanctioned their employment at weekly wages not exceeding 30s. In January, also, a scheme was agreed with the War Office for the employment of prisoners of war. But the conditions were necessarily stringent. Precautions against escape had to be taken, and arrangements made for housing, transport and commissariat. Some months were spent in preparations. By the end of July, 15 camps had been provided, employing 1,476 prisoners. In June, 1918, there were working on the land, either from 190 camps, or lodged on farms, 11,794 prisoners. The number was subsequently increased to over 30,000. Their excellent work had quickly overcome the prejudice which was at first entertained. Other schemes were arranged with the Home Office early in February, 1917, for the employment of interned aliens and of conscientious objectors. Local feeling was, however, too strong against both classes. The number of aliens employed was under 2,000, and that of conscientious objectors scarcely rose above 200.

A more important source of permanent labour was found in the work of women. This side of the organisation might well claim an article to itself. Here only the bare outline can be traced. An addition of 210,000 was made to the pre-war number of part-time village workers, principally owing to the public spirit of the women themselves and to the indefatigable activities of the Village Registrars and the County Committees. Living at home, familiar with rural surroundings, and available for seasonal needs, women of this class escaped the difficulty of housing, and proved especially attractive to farmers. Their labour was organised and made more efficient by the use of group-leaders and forewomen. The want of proper boots prevented many of the village women from offering their services. The difficulty was met when the Treasury allowed the Food Production Department to buy boots wholesale, and sell at cost price, less a bonus of 5s. to genuine part-time workers, working not less than 24 hours a week. In addition to the village women, a Land Army was formed of those women, over 18 years of age, who were willing to work on the land during the war, to give their whole time, and to go to any district where they were needed. A very large number of recruits offered themselves. But so high a standard of physical fitness was fixed that 75 per cent. were rejected. The greatest strength which the force ultimately reached was 16,000 in September, 1918. For the most part town-bred, and many of them highly educated, the Land

Army was not at first acceptable to farmers. They were generally inexperienced, and their six weeks' courses at one of the 612 training centres which were established could not do much more than harden their muscles and make them acquainted with animals and implements. There were always difficulties of housing to be faced. There was also the fear that, if women were permanently employed on the farms, the men would be taken by the War Office. This obstacle was removed in January, 1917, when the Army Council decided to treat female labour as supplementary to, and not in substitution for, male labour. Reassured on this point, farmers gave them a trial. The quickness with which the women learnt their work, their endurance, their cheerful acceptance of hardships and discomforts conquered all difficulties. In the care of horses and live-stock, as milkers, thatchers, tractor-drivers, and even as ordinary farm-hands, they made good, and, in very adverse circumstances, did invaluable work. The Land Army deservedly became the most popular feature at any agricultural gathering. The Women's contingent, both part time and whole-time, upwards of 300,000 in number, was organised and administered by women, both at the Central Office in London and in the numerous County Committees.

One other source of temporary labour must be mentioned. As early as January, 1917, plans had been discussed for obtaining the services of public-school boys and their masters for the coming corn harvest. In the next few months, conferences were held by the Food Production Department with the National Service Department. The latter body, with the co-operation of the County Executive Committees, made excellent arrangements for the boys and their camps. Nearly 5,000 boys helped to gather in the corn harvest of 1917, and, at the corn harvest of 1918, upwards of 15,000 gave their assistance.

Numerically, the assistance given by additional workers on the land sounds imposing. But, at first, the quality of the labour of skilled and of inexperienced hands differed almost as widely as the military efficiency of an armed crowd and a disciplined army. As time went on, the improvement was very marked. But the additional burden of instruction, training and organisation which was imposed on farmers was heavy. Practically, the shortage of skilled labour always remained acute. Nor did time allow either the Board or the Food Production Department to give effective aid in the approaching season of spring ploughing beyond the labour that has been mentioned. In some cases farmers were short of teams for the work. Locally, the deficiency was met by arrangements with the Army Council. Farmers in the neighbourhood of Military Camps were enabled to hire heavy draught horses, at first with, and ultimately without, their soldier drivers. A census taken of steam-tackle

sets in January, and a map subsequently made of their distribution, revealed the fact that nearly half of the total number of 500 were out of action, from the want either of drivers or of repairs. Three hundred men, experienced in the work and applied for by name, were released by the military authorities, and arrangements were made to put in repair the broken-down sets. By June, 1917, all but 40 sets, which proved to be obsolete, were at work. Even for the spring ploughing something was accomplished. The Steam Cultivation Association recognised the gravity of the crisis, and agreed to the request that they would keep sets at work from daylight to dark seven days a week. By this means an increase of 25 per cent. was obtained in working hours. It had been hoped to provide an adequate supply of motor-tractors. The hope was frustrated by a variety of causes. The tractors could not be built in this country, because manufacturers and material were engaged in the supply of munitions. A large number were, therefore, ordered from America through the Ministry of Munitions. But the pressure on transport was so severe that few were landed in time. All the tractors that the Food Production Department could collect for the spring ploughing consisted of 477 Government-owned machines and 135 hired from private owners, together with 54 caterpillars built for military purposes, and borrowed from the Russian Government. The use of tractors was a novelty, and was little understood. Drivers were inexperienced. Some of the machines were not of the best type; others were employed on unsuitable land. But, even in this experimental stage, their value was so clearly established that only the most sceptical of farmers remained unconvinced. The trial was expensive, but successful. In ordinary times the introduction of tractors into field cultivation on any large scale would have taken twenty years. Under the pressure of emergency, in spite of numerous failures, it was done in three months. Prejudice was overcome by ocular demonstration, and the way paved for their extended and general use.

With such assistance in labour, horses and machinery as has been described, the spring ploughing and cropping were accomplished, and the harvest gathered. The addition to the tillage area of the United Kingdom was approximately one million acres. It was not all net gain. Against the increased corn, straw and potatoes grown on the added area must be set the loss of meat on the broken-up grass. In England and Wales, for example, there were 187,420 acres of pasture ploughed, which would have added 1 cwt. of meat per acre to our food supplies. A strong point was rightly made of this loss by opponents of the plough. Their arguments were strengthened by instances of the total destruction of crops by wire-worm on newly ploughed grass. In hundreds of letters the policy of the Board was denounced

as that of "ignorant charlatans." It is, of course, true that there were losses as well as gains, and that the net advantage can only be calculated by allowing for losses. But in the estimates of the Food Production Department, the casualties were, as results showed, liberally discounted. The crops, like the men at the front, had to "go over the top." The estimated yield was put so low that a large margin of safety was allowed. Wire-worms were no new discovery. Speaking at the Farmers' Club, November 2, 1914, the President, then M.P. for the University of Oxford, had urged that, if the war was prolonged, a wheat shortage among the Allies was inevitable, and that this country might not be able to obtain its normal supplies from abroad. We might, he said, grow one-fifth more, or even three-fifths of our needs. But wheat crops on newly ploughed land were no certainty. "We all know the danger, for instance, of such creatures as the wire-worm." The risk was not therefore unknown. Nor was it forgotten. As a matter of fact, however, the successes on the newly ploughed land, judging from reports received in 1917 from 55 counties, outnumbered the failures by four to one. The usual crop was spring oats. But a great variety of other crops succeeded, such as wheat, barley, peas, beans, potatoes, mangolds, mustard. Success depended less on the choice of the crop than on the firmness of the seed-bed. Where the soil was sufficiently consolidated, the activity of the wire-worm and the effect of the drought in the early summer were checked. Much of the damage attributed to wire-worms was caused by want of proper tillage and, above all, by the absence of the roller or the land presser.

No subject opens a wider door for divergence of opinion than the conversion of pasture into tillage, and strong opposition was naturally to be expected from practical men whose livelihood was at stake. For many years of peace, live-stock farming had been paramount in the United Kingdom. It is a safe, interesting and reasonably remunerative industry, in which British farmers excel. It is less anxious than tillage, less risky and less costly, especially in labour. But in 1917 these considerations were superseded by national necessities. Quantity of food was the one supreme object. As between grass and tillage, the only question worth asking was—which of the two can support the largest number of persons? It is answered in Sir Thomas Middleton's Table of the numbers to whom the two methods of husbandry will supply a subsistence diet for one year:—

100 acres	very poor grass converted into meat,	2-3 persons.
" "	medium	" "
" "	very good	" "
" "	mangolds (average crop)	12-14 "
" "	wheat (av.) as bread	25-40 "
" "	potatoes (av.) as vegetable	35 "
		200 "
		400 "

From the general result of these comparative figures, there is no escape. *No one responsible for feeding the nation in time of war could hesitate to adopt the policy of the plough, however unpopular it might be with those whose individual interests appeared to be endangered.*

The acreage actually under tillage in England and Wales in the cereal year 1916-17 showed increases in the following crops, as compared with the previous season:—

Corn (including peas) . . . . .	310,769	acres.
Potatoes . . . . .	80,039	"
Turnips and swedes . . . . .	34,215	"
Mangolds . . . . .	10,705	"
<hr/>		435,728 acres.

The winter sowing of wheat in 1916 had fallen by 62,617 acres; but this decrease was made good and turned into an advance on the total acreage of the previous year by a spring sowing of 68,894 acres. These increases in the principal crops were partly obtained by an addition to the arable area of 187,420 acres of permanent grass, partly by a reduction in bare fallows of 66,588 acres. The other source of the increases was the displacement of other crops, of which the most important were clovers and grasses (90,765 acres); beans (25,665 acres); mustard for seed (41,532 acres); hops (14,406 acres); vetches (10,350 acres); cabbage (8,000 acres).

Though the intervention of the Government only became effective at the spring season of 1917, the actual weight of human food produced in the United Kingdom was considerably increased. Under war conditions, the three white-corn crops as well as potatoes must be treated as constituents of bread or its substitutes. The production of white-corn crops in 1917 exceeded that of 1914, 1915, and 1916 by 4,710,000 quarters, 3,837,000 quarters and 5,827,000 quarters respectively. Measured by weight and not by acres, the additional weight of wheat, barley and oats, and of potatoes on agricultural land, was, as compared with 1916, 3,906,000 tons. As compared with the more bountiful seasons of 1914 and 1915, the addition was 1,140,000 tons and 1,130,000 tons respectively. But the effect of the short campaign cannot be fairly judged by the actual increase only. The arrest of a threatened decline must be taken into account. During the acute crisis at the close of 1917 and in the early weeks of 1918, the addition of 4,000,000 tons to our output of food was of the utmost value. If, instead of an increase, there had been a decrease in our home-grown supplies, the consequences to ourselves and our Allies would have been, as will be shown later on, extremely grave. To this timely increase in corn and potatoes, the farmers of England and Wales largely con-

tributed, in spite of a season which could not be called favourable. In yield per acre in the United Kingdom the wheat harvest of 1917 ( $30\frac{1}{2}$  bushels) was better than 1916, but worse than 1914 and 1915. Barley (32 bushels) was better than 1915, equal to 1916, but worse than 1914. Oats ( $43\frac{1}{2}$  bushels) were higher than in any of the three preceding years. In 1917 the yield of the potato crop ( $6\frac{1}{2}$  tons per acre) equalled that of 1914 and 1915, and greatly exceeded that of 1916. It was in area and yield one of the outstanding successes of the campaign. In normal times, a considerable part of these crops, with the exception of wheat, is, of course, fed to animals. Under war conditions they had to be appropriated for human food. Live-stock was, therefore, unusually dependent, in the comparative absence of imported feeding-stuffs, on the home-grown resources of roots and hay. The 1917 crop of turnips, swedes and mangolds in the United Kingdom (35,011,000 tons) was heavier in weight than in any of the three previous years of the war. It exceeded that of 1914 by 1,292,000 tons, and that of 1916 by 2,693,000 tons. To this should be added the increased weight of oat-straw, which was greater than that of any of the three preceding years. But the superiority of hay in feeding-value per ton, over both roots and straw, makes the hay harvest supremely important. The hay harvest of 1917 (13,163,000 tons) was considerably better than those of 1914 and 1915: but it was less by 2,035,000 tons than that of 1916. Consequently, though the crops of roots and hay produced in 1917 (48,374,000 tons) were greater in weight and feeding-value than in 1914 and 1915, and heavier than the crops of 1916, they were, owing to the smaller yield of hay, inferior in feeding-value to the lesser weight of 1916 (47,526,000 tons).

Of the crop-displacement in England and Wales, those in mustard for seed and in hops were effected by the direct action of the Board. In the case of mustard for seed, the demands on tonnage restricted the export trade in the manufactured article, and, in the stress of war, the land was needed for the production of human food. In 1916, 65,720 acres were under the crop, which, on suitable soils, is remunerative. Some farmers had already made their arrangements for the supply on the scale of the previous year. If action was to be taken at all, it had to be prompt. Conferences between the Board and the trade resulted in an agreement to reduce the acreage by 62 per cent. The contracts for mustard seed were distributed by licences, as evenly as possible, among the districts from which the supplies are usually drawn. Owing to the large capital invested per acre by hop-growers, the reduction of the area under hops was still more difficult. Apart from the crop itself, the cultivation, from its intensive character, is of great value to agriculture. But in the

interests of producers themselves, some change was necessitated by the control of the brewing industry in 1917. In order to save tonnage, the Government decided to reduce the imports of brewing and distillery materials by 48,000 tons per month, and to cut down the barrelage of beer from the 36,000,000 barrels brewed in 1914 to an annual rate of ten million barrels, afterwards increased to about fourteen. The area of home-grown hops in 1914 was 36,661 acres ; but brewing was now reduced by nearly two-thirds. If, therefore, production were maintained on the old scale, the supply would largely exceed the demand. Half the product would be unsaleable, especially as there were big stocks in hand. In the interests both of producers and of the nation, a part of the richly cultivated area could be more profitably used for the supply of human food. Conferences were held by the Board with hop-growers, the hop trade and the brewers, which resulted in the establishment of a Joint Committee. Imports of foreign hops were prohibited, prices regulated, and hop growers asked to reduce their acreage by slightly more than half the area which was devoted to the crops in 1916. At first, the reduction was voluntary. Subsequently, at the request of the growers themselves, it was made compulsory by an Order from the Board. On a smaller scale, a similar reduction in the area devoted to bulb-growing, and its use for human food, was carried out by the Board through arrangements with bulb-growers, especially in the Spalding district. In all cases the pecuniary sacrifice which was involved was patriotically accepted.

Among other efforts to stimulate food production may be mentioned the marked success in obtaining a larger supply of allotments, and the partial failure to increase the dwindling pig population of the country.

Under the Defence of the Realm Act, powers were delegated to Town and Urban District Councils enabling them to take possession of any unoccupied land, and with the sanction of the County Executive Committees of any occupied land, for the purpose of letting it to residents in urban areas for cultivation. In the metropolitan area similar powers were vested in the Borough Councils. In rural districts a stimulus was also given to the movement. Railway companies, colliery-owners, and private owners of land gave their help. Travelling inspectors, sent out by the horticultural division of the Food Production Department, visited local authorities to stir them to fresh efforts, and to aid them in obtaining land without incurring ruinous claims for compensation. By these and similar agencies the number of allotments was raised from the pre-war figure of 530,000 to about 1,400,000 in 1918. The enthusiasm was great. Nearly a million and a half of small producers studied the vicissitudes of the

climate and the capabilities of the soil with the interest of farmers. Extraordinary successes were achieved. Crops were grown on the most unpromising material: cabbages appeared out of concrete and broccoli from brickhats. As the strain on man-power and transport grew more intense, the value of the movement became more marked. The crops were grown in the spare time of workers pursuing their daily avocations, while their wide local distribution placed food at the doors of consumers, and so relieved the carrying capacity of railways. Socially, also, the holdings were useful. They gave men a hobby, an occupation and an interest, which they could share with their wives and children. In the early stage of the movement, however, it was in danger of collapse from the difficulty of supplying cultivators with seed potatoes. The crop of 1916 had failed to so great an extent that there was an acute shortage, increased by the severe weather which hindered the opening of the clamps, and rendered transport unsafe. Prices soared. Their regulation proved one of the most intricate problems of the war. A flat rate which gave no advantage to potato-growing districts was an impossibility. Almost equally impossible was it to fix a price for ware potatoes which would bring out the stocks without forcing up seed potatoes beyond the reach of small growers. Many a time must the Food Controller have regretted that Sir Walter Raleigh was not beheaded before, instead of after his discovery of the tuber. The Board had undertaken to supply a limited quantity of seed to those small growers who notified their local wants. The Food Production Department, then in its infancy, had to implement the promise. Weeks passed; but no supply could be obtained. Meanwhile orders had come in, and growers were clamorous. In January, 1917, a Committee of growers and merchants had been set up in Scotland to obtain the seed. It failed to do so. Ireland was applied to; but the Government refused to license export. The contracts originally made for seed potatoes were cancelled, because the scale of fixed prices on which they had been based was raised. But, before the frost broke, the tenacity and energy of Mr. P. G. Dallinger triumphed. The notified demand of 11,000 tons was more than met, and a total of 15,000 tons was distributed to thousands of growers, scattered all over the country. The new allotment-holders were spared a disappointment which might have seriously prejudiced the progress of the whole movement.

The attempt to increase the pig population partially failed. In 1916, the number of breeding sows, as compared with the ten years' average, had fallen by 41,253, and of "other pigs" by 186,482. It was hoped that, with the increased supply of green food from the multiplication of allotments, pig-keeping might be revived as a domestic industry. In concert with the Local

Government Board, a letter was sent out by the two Presidents to Urban and Local Sanitary Authorities, encouraging them to relax the stringency of local by-laws. For the same object a Regulation (2 : 0) was issued under the Defence of the Realm Act. In country districts the agency of the Rural League was used to stimulate pig-keeping. In a sporting county people were urged to "walk a pig instead of a puppy," an unfortunate phrase which aroused a storm of criticism from the surprisingly large number of persons who appeared unfamiliar with the practice to which the phrase alluded. The movement was strenuously advocated by leading agriculturists as the cheapest form of meat production. To give a further stimulus to pig-keeping, conferences were held with prominent breeders; a committee was formed, and a special branch established at the Board, with Mr. H. S. Cautley, M.P., as its director. But, as time went on, it became increasingly evident in 1918 that, owing to the acute tension of the bread-stuff position, no barley could be spared for meal. Every grain was needed for bread. Offals, owing to closer milling, were of the poorest quality. Maize was unobtainable. The Board was, therefore, obliged to alter its tactics. It had to damp down enthusiasm, and urge pig-keeping without meal. The advice was unwelcome. Prices were, moreover, discouraging. But the effort, in one material respect, succeeded. Though the number of "other pigs" in 1918 showed a further fall of 256,324, breeding sows were increased by 35,249 on the figures of 1917, and by 6,543 on the numbers of 1916.

During the summer months of 1917, Parliament was mainly occupied with the Corn Production Bill, which passed into law in August. The measure need not be discussed in detail. For a period of six years it gave the Board of Agriculture powers to enforce the plough policy and improve the cultivation of land. In return for the acceptance of control and of the increased risks of arable farming, it guaranteed growers of wheat and oats for the harvests of 1917-22 against substantial loss, if prices fell during that period. It prohibited the raising of rent where it could be shown that, without the guarantees, the holding could not have stood the rise. It provided machinery for fixing and enforcing minimum rates of wages for agricultural labourers. On this last-mentioned provision, a few words seem necessary. On national and social grounds, some machinery for the regulation of rates of payment in agriculture had long been advocated. Wages south of the Trent were miserably low. But, immobile and isolated, labourers found it difficult to combine and, without combination, to enforce their demands for higher pay. Organisation for the purpose of collective bargaining was inevitably a slow process, even if it eventually succeeded. Apart from these

considerations, war conditions forced to the front the immediate establishment of a Wage Board.

In ordinary times, the chance of obtaining a rise in wages comes to a worker when two or more employers compete for his services. It was at first expected that the drain on man-power would give him this opportunity. On this ground, the Milner Committee of 1915 decided not to recommend minimum wages. But further experience tended to show that war conditions would increasingly prevent agricultural labourers from benefiting by the ordinary laws of supply and demand. Those laws were, in fact, suspended. In the winter of 1916-17 wages already lagged behind rising prices. Yet, in the face of food shortage, the men could not strike. Public opinion would not have tolerated any stoppage of agricultural work which would have imperilled the supply of bread, meat and milk. Their strongest weapon was struck from their hands. Many of the younger men were also placed in a new difficulty by the consequences of a dispute with their employer. They were exempted from military service for work on a particular farm, and, if dismissed, passed at once into the Army. The value of labour on the land was becoming so great, that steps had to be taken through the Labour Exchanges to discourage men from leaving the industry for more highly paid employments. In these respects the free action of agricultural labourers was seriously restricted. Still more unfavourable to their opportunities of securing advanced wages was the administration of the plough policy. It involved the necessity of flooding their market with extraneous and subsidised labour. The Government knew that it would have to ransack the corners of the country, in order to supplement the labour on the land with soldiers, women, both half-time and whole-time, public-schoolboys, national service volunteers, old-age pensioners, interned aliens, and prisoners of war. For their services farmers paid the current rates of wages in their district. But if no machinery had been created to regulate wages, this army of supplementary labour—eventually close on 400,000 strong—would have been, in effect, a subsidised host of “blacklegs,” taking the bread from the mouths of agricultural labourers. Such a position was impossible. The establishment of machinery to regulate wages was an essential feature in the Corn Production Act. But there was no link between the Wage Board and guaranteed prices, except that both ceased to operate at the same date. The Act did not connect the two, or make the one dependent on the other. It struck no bargain with farmers. Whether the machinery was, or was not, the best for the purpose, is, of course, an open question. It accomplished its purpose. The Wage Board was not an unqualified blessing. It was too rigid, too mechanical and inelastic.

to deal satisfactorily with an industry whose conditions are so varying as those of agriculture. On the other hand, it certainly did not prove an "unmixed curse." Agriculture in 1917-19 was hampered by no strikes; it contributed practically nothing to the record of 107,000,000 days lost by industrial stoppages in 1920-July, 1921. The Wage Board tided the industry over difficult times; it prevented violence; it maintained the peace; it kept wages in rural districts abreast of rising prices; it stimulated the organisation of workers' Unions, and materially assisted the men to stand on their own feet; it brought employers and employed together, and facilitated the creation of machinery which might prove more satisfactory to the industry. The country owes a debt of gratitude to the members of the Board, who explored an uncharted sea, and especially to Sir Ailwyn Fellowes (now Lord Ailwyn), who undertook the great responsibility of the first Chairmanship.

During the ploughing and sowing in the spring of 1917 for the harvest of that year, plans had been laid for the harvest of 1918. The original programme for England and Wales, submitted to the Cabinet in April, 1917, was conceived on large lines. It aimed at adding three million acres to the arable area of 1916. It proceeded on the assumption that the scheme would be immediately considered, that the work could be begun in the early summer, and that sanction would be obtained for the employment of 80,000 additional able-bodied soldiers on the land, the loan of 60,000 Army horses, and the provision of 5,000 tractors. On April 18, a Conference was held in London with the Chairmen of the Executive Committees and the District Commissioners, at which the necessity and scope of the plan were explained. They were urged to complete their surveys in order to schedule the land most suitable for ploughing. But it was not till late in June that the Cabinet was able to consider the programme. Without the sanction of the Government, no arrangements could be completed for the indispensable supply of men, horses, and tractors. Precious months were lost. For these reasons, and in view of the increased production anticipated from Scotland and Ireland, the interval of suspense was used to revise the programme. On June 14 it was issued in a modified form to the Executive Committees. It set out the increased arable area aimed at in each county and estimated the contribution expected from each. The total task was to add, partly from permanent pasture, partly from temporary grasses, 2,600,000 acres to the tillage area of 1916.

One obstacle to the progress of the campaign was the difficulty of convincing farmers of the reality of the danger. Each delay, disappointment, failure, or modification of plans, however inevitable it might be, each acre of land appropriated

for aerodromes, was used as a proof that the position was safe. It not only encouraged farmers to hang back, but chilled the enthusiasm of the Executive Committees. From this point of view, the withdrawal of the 18,000 skilled ploughmen on May 10, 1917, the loss of the summer months, the delay in the sanction of the programme were serious and widespread in their combined effects. Still more paralysing was the comparative failure to supply the promised soldier labour. The Cabinet decided (June 27) that, for the 1918 programme, 25,000 men experienced in agriculture, or used to horses, and 25,000 unskilled men should be provided by the military authorities at the rate of 5,000 a week, beginning on July 7. On this decision, the whole 50,000 men ought to have reached the Distribution Centres by the first week of September. But so great was the pressure on the various fronts that, though upwards of 30,000 had arrived by December, the full complement was not obtained till late in March, 1918. Almost equally great was the disappointment over the supply of tractors. At the end of June the Cabinet called upon the Ministry of Munitions to arrange for the home manufacture of 6,000 tractors on the specification which Mr. Ford of Detroit placed at the disposal of the Government. Again the pressure of military exigencies intervened. The arrangements had to be altered, and the machines ordered in America. But precious time was once more lost. It was not till February, 1918, that deliveries began to arrive in large numbers. But long before that date, the supply of mechanical assistance had been greatly increased as compared with the previous spring. Between August, 1917, and May, 1918, upwards of 800,000 acres were ploughed, cross-ploughed, or cultivated by the Government-owned tractors.

Throughout, the skilled labour situation continued unsatisfactory. One bright spot was the decision of the Cabinet in June that men employed on farms "on farm work of national importance" should not be posted for service with the Colours, or called up for medical examination or re-examination, without the consent of the Executive Committee of the County. Another was the unexpected and valuable windfall of 150 members of the Metropolitan Police, who volunteered their services in their old industry of ploughmen, and, with the consent of the Chief Commissioner, were employed on the land with excellent results. But, otherwise, the effort to obtain skilled ploughmen was disappointing. Even when the promised soldiers began to dribble in, very few were found to have any experience of the plough. A training scheme was drawn up, accepted by the Army Council, and put in operation. Though many of the men trained on rapidly, the delay was unfortunate. It meant that a number of horses were held back, because there were no skilled

men to take them in charge. The dispiriting effect of these delays and successive disappointments was intensified by serious troubles over meat prices. Nor had the harvest of 1917 proved so easy or so bountiful as to lift the depression. It was better than that of 1916. On the other hand, it was the most protracted of the four war years 1914-17, and the yield of all corn crops, except oats, was less than that of 1914 and 1915. In October, the ordinary work on the farms was in arrear. But the position both of food supplies and of transport was still critical. The recent harvest showed that production had seriously declined both in France and Italy; the foreign food resources of the Allies were pooled; and supplies of wheat in America, which was practically the only available source, were short. The submarine campaign was still telling severely on our carrying capacity. The British losses of 1917 amounted to 3,660,000 gross tons, or, if the losses of 1914-16 are added, to a total of upwards of 5,924,000 gross tons. On the diminished tonnage which Great Britain commanded fell a great part of the responsibility of carrying the American troops to Europe, an estimated sacrifice in cargo-carrying capacity of 300,000 tons a month. In the face of these facts, it was impossible to relax the pressure of the food-production campaign. Efforts were made to counteract the growing feeling that the Government was not in serious earnest. In this hope, a second Conference with the Chairmen of Executive Committees and the District Commissioners was held on October 24 in London, when the President and the Director-General of the Food Production Department had the help of Lord Milner. During the critical months, meetings were also held in various parts of the country—at Shrewsbury, Exeter, Darlington, Chertsey, Gloucester, Westminster, Newcastle, Fareham, Reading, Norwich, and elsewhere. At all these meetings it was evident that, apart from prices, which were not under discussion, labour was the main difficulty. A fresh application for help was made to the Cabinet in November. But the result only slightly eased the situation. Four thousand German prisoners, who were skilled ploughmen, were transferred to this country from France. It was not till February, 1918, that they were housed and made available in any number. Agricultural furloughs for three months were granted to 1,500 soldier ploughmen returned from overseas. It was also decided to provide a large number of Colonial soldiers, Schleswig-Holsteiners, and Danes. But these sources of supply proved illusory. Only 123 Colonial soldiers were obtained; the risk of bringing over natives of Schleswig-Holstein was, on second thoughts, considered too great; very few Danes responded to the appeal of the Minister of Labour.

These many discouragements checked progress. The summer

months had been lost; up to the middle of October ordinary farm-work had fallen into arrear, and little ploughing had been done. But the tide was turning. The pressure was never relaxed. The activity and efficiency of the Food Production Department told more and more strongly. The multifarious aid which it was able to give to agriculturists was a practical proof of the anxiety of the Government to help. It was also a source of growing confidence to the Executive Committees, who recovered their enthusiasm, and felt that they had behind their orders the aid of a powerful organisation. The concession made by the Food Controller on meat prices relieved the tension among agriculturists. The advent of the rationing system convinced the most sceptical that the food situation was critical. Public opinion among farmers slowly veered in favour of the plough. Men who from patriotic motives had broken up their grass were determined that the sacrifice should be universal. Everything now turned on labour. Some of the Executive Committees followed the trend of feeling; instead of resisting it and pressing for the most suitable land, others were encouraged to aim at securing a contribution from each occupier. The change helped to solve the labour difficulty, and was therefore approved at head-quarters. Though the modification of policy erred in principle, its adoption facilitated the execution of the tillage programme. Weather conditions improved during November. Before Christmas considerable areas of wheat had been sown, stubble-land ploughed, and the root crop harvested; farm-work was well advanced. During the first weeks of 1918 the weather was ideal for ploughing. Farmers seized their opportunity gallantly. They had received little of the promised help in men or machinery. But, working themselves in the fields, early and late, and strongly backed by the willing labour of the men and women they employed, they made a magnificent attempt to complete their task. Mainly from their own resources they accomplished more than two-thirds of the programme. As compared with 1916, they increased the area under other crops than grass for the harvest of 1918 by upwards of 1,950,000 acres.

As a matter of legal form, the ploughing was done under orders from the Executive Committees. Not less than 100,000 of these notices were served on occupiers. The great majority were carried out willingly. Only in 254 cases were prosecutions instituted for default, and in 236 of these cases convictions were obtained. The Committees also exercised their powers of grading up the cultivation of land. A strong agricultural opinion was created against its misuse or neglect. In the vast majority of cases improvements were carried out by the occupiers themselves according to the directions of the Committees. But 27,287

acres of badly farmed land were taken possession of by the Committees, and arrangements made for their proper cultivation. In the case of 317 occupiers, holding 20,197 acres, the Board determined, or authorised the landlords to determine, the tenancies, which were at once placed under other management.

A vigorous policy, persistently pursued, is bound to make enemies. Admittedly, it caused hardships and loss to individuals. Carried out on an extensive scale with the utmost speed, it was inevitable that there should be mistakes. In some districts, Committees, unable to follow the instructions of the Board and select land with due consideration for the circumstances, balance and equipment of each farm, were obliged to aim at securing from each occupier an equality of contribution. In other districts, the ploughing of pasture was pressed when the season was too advanced for the land to be cropped with reasonable prospects of success. But, on the whole, the work of selection was admirably done, and suitable land was chosen. Even where it was not impossible that mistakes had occurred, the Board defended, in Parliament and elsewhere, the action of its local agents, who were carrying out a most difficult and invidious task to the best of their judgment and experience. But individual cases were made the most of in the House of Commons and the Press. Criticism was severe. It was embittered by the state of the crops during April and May, 1918, on the freshly broken land. A cold wet week, followed by a dry cold period, damaged the late-sown wheat and oats, and on the newly ploughed land specially favoured wire-worms and leather-jackets, which injured, and in some cases destroyed, the young plants. Weather conditions in June, however, improved. The cereal crops revived and, as harvest approached, became exceptionally promising. In the South, they were secured in fine condition; in the North the incessant rain of September and October found them still ungathered. Flooded fields and sprouted grain became a familiar sight. It was estimated that nearly 5 per cent. of the crop was totally lost, that 7 per cent. of the wheat was unfit for milling, and that 15½ per cent. of the barley was unfit for brewing. On the other hand, the greater part of the damaged grain was available as food for live-stock.

In the wet and protracted harvest of 1918, critics of the plough policy found fresh support for their opposition. When the ravages of insect pests on the newly broken land, the damage done by the wet months of September and October, and the sacrifice of meat on the ploughed-up pasture, were all taken into account, it was argued that the nation gained little or nothing by the increase of tillage. The point is important; it can now be discussed without heat.

The question is not entirely one of pounds, shillings and pence. Wider considerations enter into the discussion. Without the forward policy of the plough, agriculture must have dwindled under the pressure of the war. The tillage area would have continued to contract. Government intervention would not have been justified; the land would have been stripped of labour; and the industry would have suffered injuries from which the present generation would have found it difficult to recover. The effort made by farmers with the aid of the Government changed the situation. It aroused popular interest, and appealed to public sympathy. The national value of the industry, for the first time for many years, was recognised. The sight of crops for human food, growing all over the country in exceptional abundance, was encouraging. It gave a sense of security. Upon a people, whose nerves were strained by prolonged effort, the psychological effect was important. During the anxious months of the spring and early summer of 1918, the influence was especially useful. Nor can the movement be treated as one which affected only England and Wales or even the United Kingdom. It set an example to our Allies. France, Italy and Greece studied our methods, followed our lead, and for the harvest of 1918 entered on a campaign of increased production. It stimulated North America to fresh efforts to help a people who were doing their best to help themselves. The Commission sent over from the United States were profoundly impressed by the changed aspect of the face of the country. Farmers at home were the butts of plenty of domestic criticism; but from foreign nations they received unstinted praise. It is often said that opinion abroad represents the judgment of posterity on events at home. If that is true, the verdict of history will be given in favour of the plough policy and of the farmers by whom it was carried out.

To purely agricultural critics these considerations may not appeal. They do not meet the allegation that no net gain in human food resulted from the increase of tillage. As a United Kingdom effort, the figures of production for the cereal year 1918-19 stand thus. Measured in quarters, the total crops of white corn and pulse produced in 1914 were 36,534,000 quarters of wheat, barley and oats, and 1,494,000 quarters of peas and beans, making a total of 38,028,000 quarters; in 1916 they were 35,419,000 quarters of wheat, barley and oats, and 1,153,000 quarters of peas and beans, making a total of 36,572,000 quarters; in 1918 they were 50,598,000 quarters of wheat, barley and oats, and 1,372,000 quarters of peas and beans, making a total of 51,971,000 quarters. In other words, the corn crops of 1918 exceeded those of 1914 by 13,943,000 quarters, and those of 1916 by 15,389,000 quarters. Measured by weight, and adding

potatoes, the total weight of wheat, barley, oats, rye, mixed corn, peas, beans and potatoes produced—

in 1914	was	14,017,000	tons.
in 1916	"	11,611,000	"
in 1918	"	18,007,000	"

In other words, the weight of food produced in the United Kingdom in 1918 exceeded that of 1914 by 3,990,000 tons, and that of 1916 by 6,396,000 tons. On the other hand, the total weight of turnips, swedes, mangolds and hay produced—

in 1914	was	46,122,000	tons.
in 1916	"	47,526,000	"
in 1918	"	45,488,000	"

In other words, the weight of food for live stock produced in 1918 was less than that of 1914 by 634,000 tons, and less than that of 1916 by 2,038,000 tons. Against this deficit must be set the increased weight of oat-straw in 1918, which, in England and Wales alone, exceeded the decennial average (1908-17) by 809,000 tons. Making every allowance, however, for the increased supply of oat-straw and of light and damaged wheat and barley, less food for live-stock was raised in 1918 than in 1919. The hay harvest was the worst of any of the five war-years, and the root crop was not above the average. It may, therefore, be legitimately argued that it would have been more prudent to devote less land to cereals and more to fodder. But in reply to this argument, it may be said that the food value of the crops raised was immeasurably greater than that of the meat imperilled; that the comparison of weights between corn and roots is deceptive; that the production of meat entails the consumption by cattle of food available for human beings; that provision was made for the deficiency of cereals which was not only anticipated but actually occurred; that at no time was there an acute shortage of either meat or milk; and that, if the war had been prolonged beyond 1918, a portion of the tonnage saved on cereal imports might have been diverted to a larger importation of the world's abundant supply of concentrated cattle-food. Experience again proved the traditional ingenuity of farmers in finding unexpected stores of food for their stock. Reliance on their resourcefulness was fully justified by results. The maintenance of the head of cattle was a triumph of farming skill, which takes its place by the side of the addition to the supplies of cereals and potatoes. The net results of that addition are thus stated by Sir Thomas Middleton. After seed and light corn have been deducted, if the whole of the wheat and barley crops, one-sixth of the oat crop, and one-fifth of the potato crop—being the surplus above normal con-

sumption—were used for bread-stuff, the United Kingdom was enabled to supply bread for the whole population for forty weeks, at the scale of consumption and on the basis of milling of 1918.

In England and Wales, the main results of the harvest of 1918 in corn and potatoes as compared with 1916 and the average of the last ten years of peace, are shown by the following table:—

Crops.	1918.	1916.	1904-13.	Increase		Percentage of	
				over 1918.	over 1904-13.	over 1916.	over 1904-13.
(In Thousands of Quarters)							
Wheat . . .	10,534	6,835	6,653	3,699	3,881	54	53
Barley . . .	6,085	5,181	6,212	904	-127	17	-2
Oats . . .	14,336	10,411	10,572	3,925	3,764	38	36
<sup>1</sup> Mixed Corn . .	620	—	—	620	620	—	—
Beans and Peas .	1,328	1,122	1,529	206	-201	18	-13
Total . . .	32,903	23,549	24,966	9,354	7,937	49	32
(In Thousands of Tons)							
Pointoes . . .	4,209	2,505	2,643	1,704	1,566	68	59

In weight, the production of corn and potatoes in 1918 was increased over the production of 1916 by 3,404,000 tons. The table does not tell the whole story. The acreage under rye was increased from 55,000 acres in 1916 to 101,000 acres in 1918. Instead of being consumed in the green state, it was for the most part saved for grain. The increase of grain is therefore greater than the table shows by the produce of some 56,000 acres of rye. As compared with the decennial average, the weight of wheat-straw was increased by 913,000 tons and of oat-straw by 809,000 tons. On the other hand, the weight of barley-straw declined by 28,000 tons, leaving a net increase in the weight of straw of 1,694,000 tons. These increases were not all net gain. As compared with 1916, there was a decrease of 2,126,000 tons of hay, swedes, turnips and mangolds, as well as a loss of some 1,300,000 acres of pasture. If these losses in fodders are converted into their equivalent in meat, the total loss has been calculated, on an outside estimate, at 110,000 tons of meat. The net gain in weight of human food is, therefore, 3,294,000 tons, and in arriving at this figure the feeding-value of the additional 809,000 tons of oat-straw and of the damaged grain is not taken into account. In comparing the output of cattle-food in 1918 and 1916, it should not be forgotten that the hay crop was not good in the year 1918, while in the year 1916

<sup>1</sup> Mixed corn is shown separately in 1918. In previous years it is included in barley or oats.

it was exceptionally abundant. To these increases from the plough must be added the harvest of the spade. From the first statement of the policy of increased food production in December, 1916, to the end of the chapter, the development of allotments formed an integral part of the movement. As compared with 1916, the number of allotments had been, as previously stated, increased by 830,000. At the same time, in a large number of the gardens of private owners, nurserymen and florists, vegetables were to a considerable extent substituted for flowers. The additional weight of edible human food thus provided cannot be reckoned at less than a million tons.

Another argument against the plough policy is that whatever success it attained it owed to an exceptionally favourable season. No doubt, weather conditions in 1918 were better than in 1916, and the average yield of arable crops per acre in England and Wales was higher, except in the case of beans, turnips, and swedes. It is fairer to compare the yields of the year 1918 with the average yields of the ten years 1907-16. The following are the figures:—

		1918.	1907-16.
Wheat	.	32.9 bushels.	31.40 bushels.
Barley	.	32.4 "	32.44 "
Oats	.	41.3 "	40.3 "
Beans	.	29.4 "	29.40 "
Peas	.	27.5 "	25.68 "
Potatoes	.	6.6 tons.	6.16 tons.
Turnips and swedes	.	13.2 "	13.19 "
Mangolds	.	20.6 "	19.26 "

There is nothing in these comparative figures to make 1918 stand out as an exceptionally favourable season. It was a fair all-round year, except that the hay crop fell below the average. But weather alone did not counteract the shortage of labour or the arable cultivation of land which, according to the critics, was unsuited to the plough. The improved yields were not entirely the work of nature. Her bounty was "to advantage dressed" by human agencies. Something is due, but what proportion can never be ascertained, to the marked success of the Executive Committees in grading up the general standard of farming. Something is also due to the greatly increased quantities of sulphate of ammonia, superphosphates, and basic slag which the Food Production Department had obtained, and, by the help of the Treasury, first given in January, 1917, and subsequently continued, had delivered at uniform prices to the most remote railway stations. Thus, in the fertiliser year, June, 1917-May, 1918, 234,000 tons of sulphate of ammonia, as compared with 78,000 tons in the corresponding period of 1915-16, were distributed; to the supply of basic slag a net addition was

made of 200,000 tons; by a Cabinet decision of June, 1917, imports of phosphatic rock were secured at the rate of 50,000 tons a month, which resulted in the supply of 770,000 tons of superphosphates, a quantity largely in excess of that available in the preceding fertiliser year. Something is due to the assistance given in labour, horses, and machinery—in men, women and boys, in the training of ploughmen and tractor-drivers, in implements, harness, machinery, and supplies of other essentials, and in the organisation and increased number of steam-tackle sets. Something is due to the insistence, from early in 1917 onwards, on a declaration of the germinating capacity and purity of all seeds sold—a step necessitated at the time by the scarcity of the material and the consequent temptation to sell inferior qualities, but so permanently beneficial as to be embodied in the Seeds Act of 1920. Something is due to the supply of stocks of seed wheat of good cropping varieties, of 29,700 quarters of seed oats from Scotland, the Isle of Man or Ireland, of 32,800 tons of seed potatoes, of which 22,500 tons, including 13,000 tons of immune varieties, were distributed to small growers and allotment-holders, or to the provision of the chemicals and apparatus for spraying, of demonstrations of the process, and of hundreds of lectures on its efficacy against "Potato Blight." In the success of the allotment movement, again, something is due to the expert advice of instructors, of local gardeners enlisted in the work, and of itinerant lecturers sent out by the Royal Horticultural Society by arrangement with the Department, and to the careful watch that was kept on the supply of seeds by means of periodical returns of the stocks in the hands of seedsmen. All these and many similar activities materially assisted the bounty of nature. They were called into play by the adoption of the plough policy. It justified their operation. Without it, they would not have existed. They were, so to speak, the compensation for control. Without this aid, farmers would have been left to their own independent resources, and the true contrast with the actual conditions of 1918 is the position which the industry would have occupied, if, denuded of labour, and short of all the essentials of agriculture, they had been unable to profit by the favourable season. It is in this connection interesting to note that, in the cereal year 1918, when every acre of land was needed, bare fallows were increased by 53,420 acres. The increase is significant of the strain on the land imposed by continuous cropping, when labour and fertilisers are not available to keep it clean or restore fertility.

Few agriculturists would dispute the statement that tillage will support three times as many persons as grass. But many critics pointed out that land as grass produced food, which was lost to the nation when the area was ploughed and no crop

resulted. Instance after instance was quoted of failure—total, partial or temporary—till the public might well have believed that there were no successes. Many picturesque statements were made in highly coloured language. Isolated examples are dangerous foundations for arguments on either side. In August, 1918, a Return was asked from the County Executive Committees, giving particulars of the croppings and harvest yields on the newly-broken permanent grass-land. In March, 1919, the completed Returns were received from 58 out of the 61 Committees. Some of the facts may be of interest.

The inquiry mainly related to wheat, barley and oats. Taking the area of broken pasture as, approximately, 1,400,000 acres, the cropping was thus distributed: wheat, 250,000 acres; barley, 75,000 acres; oats, 850,000 acres. The remaining acreage was cropped, roughly speaking, with potatoes (32,000 acres), roots (5,000 acres), beans (14,000 acres), peas (15,000 acres). Other crops grown were rye, mixed corn, buckwheat, linseed, mustard, and market-garden produce. On this newly broken land, taking the acreage as a whole and including the total or partial failures, the average yields were as follows. That of wheat was in England and Wales 31.3 bushels per acre, as compared with the decennial average for the two countries of 31.4. The highest recorded yields were 80 bushels and 70 bushels per acre. But the general average is reduced by the rare failures and by the poor results of the South Eastern Counties. In the case of barley, there were few failures; but the yield was generally poor, partly, perhaps, because it was so largely used as a mending crop. The average was 28.8 bushels per acre as compared with the ten-year figure of 32.44. The highest recorded yield was 45 bushels. Oats were a very good or a very poor crop, sometimes resulting in a bare return of seed. Yields were recorded of 100 bushels per acre and of 96, 92 and 90 bushels. But the general average was 43.7, as compared with the decennial average of 40.3. In the case of beans, the best yield was 43.2, the average 27.5, the ten-year figure 29.40. In the case of peas, the best yield was 31.3, and the general average of 26.9 exceeded the decennial figure of 25.7. In potatoes the highest recorded yield was 18 tons per acre, and the average (7.1) was higher than that of 1907-16 (6.16). The other crops were either grown on too small a scale to make useful comparisons, or in some of them no comparative figures are available. But in the case of mangolds, the highest recorded yield was 47.8 tons per acre, the average 28.3, and the decennial figure 19.26. In the case of turnips and swedes, the highest yield was 19.8 tons per acre, the average 13.2, and the ten years' average 13.19. These results, taken separately, afford arguments to both the advocates and opponents of the plough. The man whose broken-up pasture grew

80 bushels of wheat per acre, or 100 bushels of oats, or 18 tons of potatoes, or 47 tons of mangolds, is sure to be at loggerheads with the man whose crop totally failed, or barely returned him the seed sown. But the general averages, on which the Government took its stand, show very large increases in the supply of human food. That, owing to the accident of weather, part of the crops was not harvested, is not an argument against the policy, unless it can be laid down as a general rule that arable farming in this country is flying in the face of Providence. It is worthy of notice that some of the best results came from the Western counties.

The gathering of the corn harvest of 1918 severely taxed the tenacity and resourcefulness of farmers. The Food Production Department rendered more substantial help than it was able to give to the spring ploughing. It now had at its command 4,000 tractors, more than 4,000 reapers and binders, and 10,000 horses with the necessary harness. It placed at the disposal of Executive Committees, or released at cost price to threshing contractors, upwards of 150 threshing machines. It had trained some 4,000 tractor drivers, supplied the petrol, paraffin, and lubricating oil, and carried out the necessary repairs. It arranged the supply of 20,000 tons of binder twine, either home-made or imported. It put into the harvest-field a force of 350,000 men, women and boys, whom it either controlled or had been instrumental in securing. But, even taking this help into account, the foul weather which prevailed throughout September and October made the winning of the harvest a greater achievement on the part of farmers than the ploughing and sowing of the extra acres in the favourable conditions of the winter and spring. The damage done to the grain was considerable; yet the figures given in the Table, which relate only to the crops secured, show that the great bulk was saved in better condition than could have been expected. But in England the harvest was the most prolonged in the decennial period (1909-18), while in Wales its duration was phenomenal. The following figures contrast the number of harvest days in 1918 with those of 1911, which was the shortest harvest in the period:—

Year.	England and Wales.			Wales.		
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.
	Days.	Days.	Days.	Days.	Days.	Days.
1911 . . .	28	27	30	27	27	30
1918 . . .	54	60	67	66	76	86

The unusual protraction of the harvest and the effect of the incessant rain on the condition of the land would have seriously hampered any attempt to extend the arable area for the harvest of 1919. It was therefore fortunate that the Board had already decided, on other grounds, not to ask for a further increase of tillage. In order to recall the circumstances, it is necessary to return to the beginning of 1918.

The question of food supplies was still a matter of grave anxiety. In one sense, it had indeed assumed a new seriousness; not only the shipping but the wheat itself was short. During the cereal year 1916-17, there had been grain available in foreign markets, if it could be safely transported to Europe. In the cereal year 1917-18, there was not enough grain in the accessible countries, if their home consumption remained normal. The United States responded generously to the Allied appeal. By a voluntary act of self-sacrifice, her people cut off a third of their daily loaf, in order that their European Allies might be supplied with bread-stuff. But though our increased production at home had made it possible to divert supplies from this country to France and Italy, both were in desperate straits. In some districts the shortage almost amounted to famine, and fears were entertained for the *moral* of the people. It is true that the shipping position was improving. The rate of destruction had steadily declined from that of April, 1917; the adoption of the convoy system had checked the successes of the submarine; the monthly returns of new tonnage built were gradually balancing the monthly losses, though that position of comparative safety was not reached till July, 1918. But if the prospect was becoming more hopeful, and the most deadly risk seemed to be in process of being averted, the strain on the reduced tonnage was growing more intense. Our carrying capacity was so restricted that civilian necessities had to be curtailed. The huge scale of the war in France, the demand for more munitions and larger supplies, the maintenance of distant expeditions, the necessity of carrying drafts from the overseas dominions, the drain on merchant shipping for the naval campaign against the submarines, made ever-increasing demands on transport. At any moment the most careful calculations were liable to be upset by new calls or unexpected losses. The torpedoing of five ships in succession reduced the country, at one time, to a ten days' supply of sugar. If a larger margin of safety was maintained in other food essentials, there was little or nothing to spare. In the early weeks of 1918, the safe arrival of grain ships from Argentina was hailed with a sigh of relief. At that time "the spectre of famine," writes Mr. J. A. Salter, Chairman of the Allied Maritime Executive, "was more terrifying than at any previous period, and the cry for more ships to transport food was only one of a host of equally

insistent, but mutually destructive, claims for transport." Yet, outwardly, life went on as usual ; current stocks met every-day wants : there was no apparent interruption in the supply of necessities. The published figures of maritime losses, though accurate, were totally misleading. But men in the secret were, so to speak, always listening to the ticking of an unseen clock-work bomb, which might at any moment explode, and destroy the whole fabric of naval, military and civilian endeavour.

Between March 21 and July 17, 1918, came the five German offensives—in the Somme Valley, on the Givenchy-Armentières front, between Rheims and Noyon, on the Montdidier-Noyon front, and finally along an extended line on either side of Rheims. The last failed. But the others were so far successful that the enemy's advance brought him within striking distance of the Channel Ports, of the main road and railway communications between the British and French Armies, and even of Paris itself. Our own casualties, including prisoners, were heavy, amounting to some 400,000 men, and nearly 1,000 guns.<sup>1</sup> On July 18 began the triumphant counter-offensive of the Allies.

These military facts are only mentioned here in their bearing on the Food Production campaign. The demands on tonnage were suddenly intensified. Losses in men and material had to be made good on the Western front. American soldiers had to be hurried over to Europe by the sacrifice of our cargo-carrying capacity. At the same time, the advance of the Germans on the French coal-fields of the North necessitated heavy shipments of coal from this country to our Ally. In this strain on our transport facilities, every ounce of food grown or economised at home was important. The production or the saving of 5,000 tons of imported food meant an additional 1,000 American soldiers and their supplies on the Western front. No one could predict with certainty how long this extreme pressure would continue, or what limits the decline in production in France and Italy might reach. As the summer advanced, reductions in food imports were contemplated by the Governments of Allied countries. In the following October, a statement was drawn up by the Transport Council for publication at the end of 1918. For various reasons it was not issued. But it contains such passages as the following : "It is well that the public, in considering the sacrifices they are asked to make, should remember those which Germany has borne for several years. . . . The Allied Countries will not be asked to suffer a reduction in food so serious as this, and such reductions as will be necessary will be made with the definite prospect of lasting only a

<sup>1</sup> *The War Cabinet : Report for the year 1918 (cmd. 325)*, pp. 61-2.

few months. . . . If . . . the maximum number of American troops are to be transported to France before the fighting of next year, and if the supplies without which they cannot attain their full fighting efficiency are also to be sent, it can only be by such a use of ships as will necessarily involve severe, though temporary, hardships to the public in Allied Countries."

By degrees, in all probability, the veil will be lifted from other corners of the food situation which official reserve has not as yet raised. But enough has perhaps been said to explain the persistency with which the Food Campaign was urged, and the grave responsibility involved in relaxing the pressure. In the early spring of 1918, a programme of increased tillage for the harvest of 1919 was prepared for submission to the Cabinet. It proceeded on the assumption that the war would be prolonged into the following year. Much of the tillage land of 1918 had grown corn crops for two or more years in succession without adequate labour to keep it clean or sufficient fertilisers to restore its fertility. It needed rest. But if it was withdrawn from cultivation without the provision of a substitute, there would possibly be a decreased output of food at the harvest of 1919. The maintenance of the existing scale of production was, therefore, one object of the new programme. But it also aimed at increasing supplies. It proposed to add a million acres of permanent grass to the area under the plough. It was estimated that, under wheat, oats and potatoes, the additional arable acreage would feed 1,725,000 persons, while as pasture it was feeding only 175,000 persons. Put in another way, it meant a net relief to our carrying capacity of 876,000 tons, and the transport to the Western front of 175,000 American troops. In order to carry out this new programme, the requirements of men, horses, implements, machinery, fuel and oil were carefully estimated. A Bill was also drafted continuing the powers of the Board under the Defence of the Realm Regulations which otherwise expired in August, 1918.

The 1919 programme was never submitted to the Cabinet for decision. A military emergency of the utmost gravity arose in March and April, 1918. Large demands on the man-power of the country were necessitated by the success of the German offensives. The situation was extremely critical. Lord Haig issued his famous appeal to his men to hold their ground at all hazards. The Military Service Act (No. 2), raising the military age to 51, and authorising the withdrawal of exemption certificates by proclamation, became law on April 18. The new powers were immediately put into force. By a proclamation dated April 20, Tribunal Certificates held by men born between the years 1895 and 1900 were cancelled. It was also made clear

that this first call was only an instalment. Agriculture ceased to be a protected industry. The pledges given to landowners and farmers, on the faith of which they had ploughed many hundreds of thousands of acres of grass, were broken. On the other hand, the military need for the men was urgent and imperative. The case was so strong as to leave no choice. It was only possible to urge the inevitable effects on food production, and, when the final decision was taken, to promise on behalf of the agricultural community that the men should, if possible, be produced. One concession was obtained after prolonged discussion and negotiation. Instead of an indefinite claim on the man-power of the industry, it was agreed on May 8 that the call should be limited to 30,000 men between the ages of 9 and 31. Quota were fixed for each County and the Executive Committees were asked to select those whose withdrawal would cause least injury to the industry. By an irony of fate, the President of the Board was charged with the duty of defending the action of the Government in the House of Commons. Nothing could show more clearly the intensity of the new interest which had been aroused in agriculture than the changed feeling of that assembly. But the argument was simple. It would be better for us at home to have to tighten our belts than, in safety ourselves, to leave our men to be butchered by German guns on the shores of the Channel for want of reinforcements.

The decision of the Government to withdraw agricultural exemptions was announced by the President at an Agricultural Meeting at Oxford on April 25. The answer given by Mr. Stilgoe, on behalf of the county, was what was expected. "The Government," he said, "need not fear for the farmers of Oxfordshire. They would do their last bit, and give their last ounce, to bring nearer the end of the war." In a similar spirit of determination the call was almost everywhere received. But the process of selection revealed the full extent to which agricultural labour had been depleted. The men of the age from 19 to 23, who were taken under the "clean cut" of the proclamation, numbered 15,588. All were more or less skilled, and half were ploughmen. But the chief difficulty lay in finding the 14,412 men between the ages of 23 and 31. They were the skilled, experienced workers on whom the cultivation of the land mainly depended. In order to obtain its quota of 500 men, one County Executive Committee had to schedule 89 wagoners, carters and horsemen, 20 ploughmen, 19 shepherds, 60 cowmen, and yet fell short of its total by 78. The instance was typical of many counties. So formidable was the situation that, on the facts disclosed, the Board appealed to the Government to take only the younger men who came under the "clean cut." But the military needs were too imperative. The men were, however,

allowed to remain over the hay harvest, and the total numbers eventually taken did not exceed 23,000 men.

The withdrawal of so large a proportion of the skilled labour left on the land changed the agricultural situation. In the judgment of the Board, it had become impossible to persevere with the proposed programme of tillage increase for the harvest of 1919. A memorandum, drawn up by the President at the time (July 20, 1918), records the considerations which influenced this decision. So far as the general public was concerned, it would have been prudent to attempt to carry out the programme. Had there been in 1919-20 an acute shortage in cereals, the Board would have been a smaller and less vulnerable target if it had tried the plough and failed, than if it had abandoned its further use without a trial. Urban populations, short of bread, were not likely to remember that the area of grass which can be successfully ploughed and cultivated for food, is governed by the available resources of labour. But in a matter of such importance, the attack of uninstructed opinion, however violent, could be allowed no weight. The decision had to be taken on practical grounds. As a general permanent policy, the Board strongly favoured the increase of tillage. But it was opposed to using its special powers and organisation to effect a change in system on the plea of necessity, if a real emergency no longer existed, unless the gain was certain and substantial. Unfortunately many of the conditions which decided the necessity and contributed to the success or failure of the programme were uncertain. Much, for instance, necessarily depended on favourable weather in the autumn of 1918 or the spring of 1919. So also the urgency of the need depended on the probabilities of the duration of the war, and of the future stringency of the transport position. If the war was prolonged into the spring and summer of the next year, further complications arose. Fresh calls on the man-power of the country would be made, which it might again be impossible to resist. On the other hand, there were signs that the Germans had shot their last bolt, and that hostilities could not extend beyond the coming winter. As regards the submarine menace, the corner of safety seemed to be turned. The rate of shipbuilding was increasing; the rate of destruction was dwindling. The programme for the 1919 harvest, even if it were successfully launched and carried through, would not relieve the threatened crisis in the autumn and spring of 1918-19. No home-grown food could be raised on the newly broken land in time to make good the impending temporary reduction in imports. From its own knowledge, the Board believed that the endurance of the rank and file of farmers was strained to the breaking-point. The Executive Committees might be relied on to do their utmost to carry out instructions, and behind them

would stand the Government and compulsion. But if a great mass of agricultural opinion definitely arrayed itself against the continuance of the plough policy, coercion on a large scale would become so difficult as to be impracticable. The recent call on agricultural labour had shaken confidence. It had revived the old uncertainty. The first decisions of the Wage Board, which came into operation in May, 1918, added a new element of insecurity. Farmers felt that the rise in wages was only a first instalment. These difficulties might perhaps have been met by such an advance in prices as would have stimulated production. But, in the existing state of public feeling, there was little prospect of any such encouragement. As events showed, this forecast proved correct. No rise was granted in the 1918-19 price of wheat, and the addition made to that of oats was small. With prices fixed, and costs of production rising, there was, unless the patriotic incentive was plain and urgent, little temptation to farmers to spread themselves in cereal production. Moreover, the programme contemplated something more than the breaking up of poor or moderate grass. It proposed to plough 700,000 acres of pasture, which was of good, though not of the best, quality. It was on land of this character that the highest results would be obtained from arable cultivation. But strong, if not organised, opposition would be provoked, unless the national necessity was overwhelming. Unless starvation was in sight, it seemed reasonable that, where land of this capital value was at stake, an appeal should lie from the selections of the Executive Committees. But legal obstacles impose delays. If speed was really essential, the drastic powers under the Defence of the Realm Act, which expired in August, 1918, must be retained. They could not be continued except by a breach of a Parliamentary bargain which could again only be carried through Parliament on the imperative plea of national necessity.

Weighing these considerations, the Board decided not to persevere with the plough programme. It came to the conclusion that neither the military position, nor the transport difficulties, nor the food prospects justified the risks of a compulsory extension of tillage, which was certain to be strongly opposed, and at the best, would not increase supplies till September, 1919. It took the view that, with the limited and uncertain labour at their command, farmers already had as much arable land as they could manage with clear advantage. It decided to rely for increased production on concentrating the available labour on the existing arable acreage, and on stimulating and supporting the efforts of Executive Committees in grading up cultivation. Two circumstances, the first of which was accidental —the foul weather of September and October, and the signature

of the Armistice in November—subsequently justified the Board's decision. But there were obvious risks in the abandonment of the programme as well as in its prosecution. It was natural that there should be a division of opinion at headquarters. The plough policy had been initiated by the Board, which had created the Food Production Department to carry it out. The latter body was now fully manned, admirably organised, efficiently equipped, enthusiastic, justly confident in its powers. In favourable weather it could probably have ploughed and cultivated the additional acreage with the resources at its command. To them the Board's acceptance of the refusal of the House of Lords to renew the powers of the Defence of the Realm Act and its abandonment of the 1919 programme came as a bitter disappointment. On July 22, 1918, to the great regret of his colleagues, Lord Lee resigned.<sup>1</sup> He was temporarily succeeded by Sir Charles Fielding. But a few months later the President resumed direct control, and such branches of the Department as seemed useful in times of peace were incorporated with the Board.

The war campaign for increased tillage ended with the withdrawal of the programme of 1919, though Executive Committees continued their useful efforts to raise the general standard of farming. It had been launched on a sea of difficulties, and buffeted by many storms of adversity. But its success or failure cannot be wholly measured by visible results. The policy and the organisation which it had created were an insurance against the prolongation of the war. Their full effectiveness was, fortunately, never tested; but their power of expansion enabled the Government to face the continuance of the struggle with greater confidence. Very different would have been not only the prospect, but the situation, if the country had relied on an output of food which was progressively declining from the low level of 1916. During the period under review, the Board and the Food Production Department had been active in other endeavours to assist the agricultural industry. The Land Drainage Act of 1918 removed a number of obstacles which hindered the effectual treatment of flooded areas. The Horse Breeding Act aimed at securing the soundness of stallions, travelling for service. The Tithe Act offered a temporary solution for a difficulty which threatened to become serious. To aid in reviving village life, more than a thousand Women's Institutes were founded. The establishment of a seed-testing station met a long-felt need in English agriculture. The foundation of a Botanical Institution at Cambridge, partly on the lines of the Svaloff Institute, will, it may be hoped, facilitate the introduction of improved varieties of our principal crops. The provision for agricultural research and education was reorganised. A School was established at

<sup>1</sup> See Lord Lee's letter in *The Times*, July 23, 1918.

Oxford on lines specially adapted for future landowners. The Technical Committee published numerous leaflets and pamphlets on subjects of interest, conducted investigations into plant diseases and insect pests, and experimented with success in the artificial preparation of manure, and in the production of a digestible food from straw. But all these and many similar activities lie somewhat outside the scope of an article which is already lengthy.

The facts of the food production campaign have been recorded, in its main outlines, as impersonally as possible, without, it is hoped, undue exaggeration or depreciation of its results. I may, perhaps, be permitted to conclude on a different note, and express my gratitude to the Executive Committees whose services to the nation and the industry were of the utmost value, as well as to that great body of agriculturists who, though their knowledge of the Board's difficulties was imperfect, made allowances for their existence, and gave it the help of their most useful support and practical criticism.

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## PROGRESS IN METHODS OF PRACTICAL FRUIT GROWING.

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### 1. INTRODUCTORY.

THE Fruit-Growing Industry in this country is now too well established for it to be necessary to discuss the prospects of the

would-be grower. Something indeed will have to be said with regard to the business aspects and to the young grower's choice of a district, but, provided he has sufficient capital at his disposal and a good working knowledge of fruit farming before he starts on his own, it need hardly be questioned that he can make a fair living out of the industry.<sup>3</sup>

In an article of this scope it is impossible to deal fully with all the details which would be of value to the fruit grower. There have, moreover, during the past ten years, been a considerable number of publications<sup>1, 2, 4, 5</sup> which deal adequately with the ordinary routine of the Fruit Farm, and it is quite unnecessary to duplicate that work here. An article on Fruit Growing which ignores such details as the distance apart at which to plant the various fruits, and particular varieties, may be thought to be somewhat superficial, but it is its deliberate intent to refrain, as far as possible, from setting out facts of this sort, which have been already published, and from going into a detailed description of the best varieties of fruit to grow, and how to recognise them.

It has, again, been quite impossible to give an adequate idea of the bearing of recent research upon economic practice, but these things are to be found, not only in the series of horticultural leaflets issued by the Ministry of Agriculture, but in the reports of the various departments of the different Research Institutions.<sup>6-11</sup> An attempt is here made to indicate, wherever possible, how far the conclusions of the research worker are of immediate application to the practical grower, and how far the observations and consequent methods of the most successful practical growers have borne the test of time. Since Sir Charles Whitehead wrote his "Practical Hints on Fruit Farming" in this Journal in 1904, there has, in the first place, been a wide development of horticulture in this country, recognised not only in the establishment of a special Horticultural Branch of the Ministry of Agriculture, but in the wide extension of private, public and State support for Research in Horticulture.

In the second place, the actual experiences of practical growers, over a long period of years, have now accumulated and there is coming to be much more intercourse and exchange of ideas within the industry.

In the domain of research, not only has an immense amount of accurate work been accomplished in the study of diseases and pests and their prevention, but new light has been thrown on many operations of fruit growing which had become more or less stereotyped. Moreover the systematic Pomologist has been busy in revising and correcting the nomenclature and identity of our fruits, and the plant breeder has shown us the

falsity of many of our old ideas, and is laying a more hopeful basis for the future improvement of our fruits.

In the field of commercial practice, growers, through their Associations, are manifesting a much wider and more progressive outlook. Many of them are actually undertaking experimental work<sup>41</sup> on their own account.

In this article, certain subjects have been dealt with at far greater length than others, and consequently may appear out of proportion. This has been done deliberately in order to emphasise those particular operations of fruit growing which are of such vital importance to economic success. No two better examples could be given than pruning and the prevention of diseases and pests. In far too many cases these operations have been regarded too much as rules of thumb, and not only has money been wasted, but plantations have frequently been so badly damaged through the use of wrong methods that years are required to restore them to a normal condition.

The headings of the subsequent paragraphs should be looked upon rather as a series of sign-posts and red flags, pointing out lines along which recognised commercial practice might possibly be improved, and giving warnings as to where a slavish adherence to tradition may end in failure rather than success. Many of the subjects, which have been passed over with perhaps two or three lines of comment, are in themselves worthy of considerable thought, and for this reason there has been appended a list of references which, though incomplete, will enable the reader to pursue the subject far deeper.

## 2. CONSIDERATIONS IN SELECTING A HOLDING.

Only too often persons have settled down to plant fruit without taking into consideration the chief factors essential to success. The most important economic considerations may briefly be summarised as follows:—

(a) *The Business Aspect.*—Though soil is of course of very great importance to the fruit grower, it is as well to give the prior place to the so-called "business aspect," in order to emphasise the nature of the industry. The fruit grower, even more than the arable farmer, is dealing for the most part with highly perishable produce. He cannot hold this produce indefinitely or even for a long period, it will only travel under favourable conditions. The demand for his produce varies with the district, it varies even with the weather.

So important are these considerations of marketing and transit that conditions favourable to easy sale, and to obtaining manure cheaply, have called into being fruit-growing areas not specially favoured by soil, even though there are many admirable fruit soils still under grass and arable cultivation to-day, and likely

to remain so, owing to their inaccessibility from a business point of view. For both the large and small grower there are various channels of disposal open, but both will do well to make up their minds for what type of customer they are going to produce and whether they are favourably situated to reach him, before settling down to plant fruit. Whether a man embarks upon a wholesale, retail or direct trade will depend both upon the size and situation of his holding and the type of his produce, as well as upon his business capabilities.

(b) *Soil.*—Second only to business considerations is the question of soil suitability. It is true that fruit of some sort can be grown on a very wide range of soils, if only a “blow away sand,” on the one hand, and a pure clay, on the other, are generally avoided. Very shallow soils over chalk, gravel or clay are also usually unsuitable, though there are exceptions even in these cases. A careful selection of varieties or an adaptation of methods of cultivation may make it possible to grow excellent fruit economically in many unexpected places.

There is as yet much to be learned with regard to soil in relation to fruit growing, for though some of the characteristic fruit soils of Kent<sup>12</sup> or Hereford, for instance, are universally recognised as eminently suitable, yet facts have unquestionably proved that apples, and even other fruits, of the highest quality, can be produced on soils of totally different character, such as on the light sands of Suffolk, over the Essex gravels, or on the Sussex weald clay, quite contrary to expectations. Lack of knowledge at the present time makes it impossible to particularise upon the subject. Two essentials would appear to be sufficient: aeration and moisture. For fruit, a soil apt to dry out rapidly in certain seasons is dangerous. Similarly a water-logged soil, or one which pans very readily, is bad in the other direction. It must be remembered that the fruit grower, compared with the general farmer, puts a very large amount of capital into the land, and has to wait a considerable period before seeing the bulk of his returns. He must therefore be particular over soil considerations, and unless he be skilled in the amelioration of unsuitable soils, he will do well to seek the optimum conditions of moisture, drainage and workability.

Soil is the deciding factor as to the kind of fruit that can be successfully grown. The lighter lands are, generally speaking, most suitable for the strawberry, raspberry and red currant; the free-working loams for apples, plums, gooseberries and nuts. On heavy loams and clay loams, certain varieties of apple and black currants still thrive, whilst cherries and pears do best on a deep, well-drained loam; but at the present time no generalities will supply the indications which a close study of local conditions can afford.

Soil will dictate the best method of growing fruit, whether by cultivated bush plantation or orchard standard in grass. The former method is generally inadvisable on the heavy clay loams. In the same way, soil will influence the growth and vigour of the tree and so decide the best distances and even the depth at which to plant.

Soil will finally determine the actual varieties suitable to plant. Note for instance how soil has dictated to the fruit growers on the Weald of Kent, with their standard orchards of Lord Derby, Newton Wonder and Bramley Seedling apples, or how in many places where apples are to be found on the clay with flint land over the chalk, Newton Wonder and Allington Pippin seem especially to have adapted themselves to the conditions. Again amongst soft fruits, different varieties of raspberry appear most sensitive to soil conditions, and a strawberry such as the Paxton is usually recognised as a "heavy land" variety.

Too much attention cannot be paid to such details. Until some co-ordinated variety trials have been definitely arranged upon very varying soils, or a more complete survey of fruit soils has been undertaken, the selection of the right variety for the particular soil must remain somewhat speculative, apart from the facts to be gathered from the accumulated experiences of the fruit-growing community.

(c) *District.*—The choice of a district is closely bound up with business considerations and soil suitability. It is impossible in such limited space here to enter into a detailed discussion upon suitable districts; it must suffice to mention types of the principal established districts, and their recognised suitabilities.

Kent has the largest acreage both under soft fruit (18,183 acres in 1918), and top fruits (46,916 acres); probably a little over half the latter figure is grass orchard. Kent is pre-eminently the county of mixed fruit plantations, and is also by far the largest cherry-growing county, with 6,595 acres as against Worcestershire's 1,896 acres. The soils are very varied and the areas very widespread and often specialised.<sup>12</sup> The price of good fruit land is always high, but this price often represents a payment for many facilities beyond good soil.

Devonshire comes next to Kent in actual acreage of top fruits (25,371 acres), though at present she grows comparatively little soft fruit (1,221 acres). When it is realised that of the total acreage 24,573 acres are apples and 22,609 acres of this grass orchard the nature of her industry will be better realised. It is largely the survival of a cider industry, which the latest developments towards the abolition of payment in kind will do nothing to aid. Though much of this acreage is represented by dilapidated plantations, it must be

remembered that the West Country can grow very fine fruit, and is full of potentialities for the man willing to apply scientific knowledge to the industry. If the grass orchards of the West Country had many of the useless sorts top grafted with varieties of standard quality, and were properly looked after, in a few years the fruit industry of these counties would be in a very different position.<sup>14</sup>

Somerset, with 23,185 acres of apples, and Hereford, with 21,793 acres, are in a somewhat similar position, though many of the Hereford growers are now leading the way in applying more scientific methods. Gloucestershire again has 19,746 acres, mainly orchard, and is pre-eminent for her acreage of Perry pears (2,485 acres).

Worcestershire, with 3,460 acres of soft fruit and 25,345 acres of orchards and mixed plantations, combines very intensive market garden work with fruit. She has by far the largest plum-growing area (4,360 acres). The fruit area is more restricted than in Kent, and the district with its fine local markets is admirably suited for the small grower.

The Eastern Counties, especially Cambridgeshire, the Isle of Ely, and Norfolk must be mentioned; these districts grow a considerable acreage of small fruit, 2,735 acres, 5,343 acres, and 6,849 acres respectively, whilst their top-fruit plantation acreage is on the increase. The Holland division of Lincolnshire shows signs of developing along the same lines.

Whilst land is not always easy or cheap to obtain in these recognised districts, it must be remembered that pioneering in a new district involves the training or importing of labour for much of the specialised work. It often means a lack of transit facilities as well.

It is also much more difficult in a new district to choose the varieties most likely to succeed. On the other hand, good fruit land at reasonable prices is often still obtainable in such counties as Essex, Suffolk and Sussex, as well as in the West, where the development of modern commercial horticulture is still largely in its beginning.

(d) *Climate, Aspect and Elevation.*—Generally speaking, the most important of these considerations is that of elevation, or to be more accurate, relative elevation. The question involved is the danger of frost damage. By planting on low-lying land, in hollows and valley bottoms, considerable risk is often run. Much land of this class has, unfortunately, been planted in the past, with the result that year after year the blossom is ruined. Places where the cold air hangs should be avoided. A good circulation of air should be looked for, and as far as possible relatively elevated sites selected, provided the soil is suitable.

There are of course large areas of land little above sea-level, yet planted most successfully with fruit. These are generally districts near the sea-board (such as the Worthing or Sandwich districts), which in consequence are notably free from severe late spring frosts.

In considering the question of aspect two things have to be taken into account to some extent: the prevailing winds of the district, and the effect of early morning sun upon sites liable to spring frosts. In the latter case it is usually considered to be the too rapid thawing of frozen blossoms that does the damage. Wind damage to foliage and blossom in early spring, and to the ripening fruit during the autumn equinox, must be guarded against, whilst in very exposed positions severe winds often permanently injure the anchorage of bush and even standard trees. Except in abnormally exposed positions it is possible to guard against these dangers to a large extent by providing some form of shelter belt. Certain hardy, strong-growing fruit trees, such as damsons, bush plums, or hazel pears, may be planted a year or two previous to setting out the main plantation.

Belts of Black Italian poplars, at 3 ft. apart, are often very quickly run up and pollarded when they have reached sufficient height. These poplar belts keep the farm well supplied with packing sticks, and have been largely used in Kent, but the fact that they are frequently to be found covered with the fructification of "Silver Leaf" disease makes it very questionable whether they are a desirable screen.

(e) *Essential Accessories.*—Finally the intending fruit grower must see to it that his holding has good communications with the main road and railways. The importance of quick and smooth transit of his perishable produce needs reiteration, whilst the hauling to and fro of bulky organic manures, water-carts, etc., require good roadways.

Water in quantity is of course a *sine qua non*. Soft water, for preference, is the most economical and effective in the mixing of sprays, and for this purpose clean water will be needed in large quantities. Good buildings may of course provide a considerable amount of this from the roof area, if proper rain-water storage is allowed for.

A cool building will be required for fruit storage. If the grower is contemplating embarking on a soft fruit business he must look around and assure himself first that he can obtain an ample seasonal supply of pickers. With regard to permanent staff, he should reckon on being able to find at least one good man for every five acres of intensive plantation. Of course far less labour is necessary for orchard land.

### 3. PREPARATION OF THE LAND FOR PLANTING.

The feeling that fruit trees give returns only after a considerable waiting period often impels people to plant too hastily and without due preparation. It is a great mistake. Three things should be aimed at before planting :—

1. To get the soil into good condition.
2. To clean it of serious weeds.
3. To put it in good heart.

1. By getting the soil into condition, is meant getting it into as good a tilth as possible.<sup>13</sup> In some cases this may involve draining and the laying of field drains at anything from 15 to 40 ft. apart, though the chief virtue of many of the best fruit soils is their natural drainage. If there is any suspicion of water logging at certain seasons the initial cost should be faced, and the drains laid and marked before the fruit is planted. The plantation should be ultimately planned so that the roots from rows of trees do not interfere with the lines of tiles.

Fortunately it is often possible to obtain a good tilth by less expensive methods. In some cases "water logging" is due to a "plough pan," that is, a hard layer of soil below the first few inches of top soil stirred by the average arable farmer. This "pan" is created by the ploughing and treading of years, and it is often sufficient simply to break this by the process known as subsoil ploughing in order to create a more perfect drainage and aeration of the soil and thus improve its condition. In many districts "subsoiling," that is, moving about the first 10 or 14 in. of soil by means of a second plough or ducksfoot following in the furrow after the first, is the general practice before planting fruit. However, this practice is not universally accepted, nor is it always attended by results commensurate with the expenditure.

On certain soils it may be of real advantage to break up this pan and stir deeply, on others it tends in the reverse direction. For instance, where there is a heavy clay subsoil it may be better to leave this undisturbed and not to encourage the tree roots to penetrate it. Even on light soils making the ground "too hover" may be detrimental to newly planted trees.

The results of the experiments on subsoiling at Woburn<sup>14</sup> did not appear to justify the outlay. In the case of small fruits it proved detrimental. It is not possible to lay down any rule of thumb in this matter, beyond stating the fact that the real upward and downward movement of water in the soil is of importance to fruit growers, and where subsoiling is likely to improve the desired conditions it should be resorted to.

Soil deficient in lime will readily respond to a good dressing and it is surprising how many soils are deficient in this constitu-

tuent. Lime is desirable for all fruit, for healthy growth and for improving the "workability" of the soil. Light dressings applied fairly frequently are usually preferable to one heavy dressing over many years, though the form in which the lime is given will to some extent determine the quantity. Where 10 cwt. of the best ground lime would suffice say, every three years, probably a ton of quick-lime (air slaked) would be more usual, and where chalk is available, to be equally effective larger quantities still would normally be applied. The form in which one chooses to lime one's land for fruit will be governed partly by the type of land, the more caustic forms for the heavier soils, and by the price of what is most readily available and at the same time suitable.

Conditions will also be improved in many instances by adding humus to the soil in some form. It may be by the ploughing in of a green manure or by the opening effect of a dressing of some organic manure such as shoddy.

Finally the growing of certain crops preparatory to planting fruit may considerably affect soil conditions. Fortunately, the crops which usually bring condition frequently also help to clean the land, thus fulfilling our second aim also. On suitable land, a potato crop serves both purposes admirably, for the soil here is deeply and frequently moved. These questions of "condition" are especially vital where soft fruits are to be planted.

2. Too much stress cannot be laid upon the necessity of fruit planting only on land thoroughly cleaned from such serious weeds as couch and water grass, bindweed and coltsfoot.

Once the land is planted with permanent trees, cultivations become more complicated and expensive. Unfortunately only those who have had to reclaim plantations smothered with weeds realise what the difficulties are. In the case of young trees, weeds around the roots give a definite check to growth, whilst many a young plantation of strawberries and raspberries has been completely smothered before ever it has had the chance of cropping, simply because the ground had not been properly cleaned. The growing of a cleaning crop for one or two years prior to planting, and the frequent and deep cultivation of the soil, are all that should be necessary. The good fruit grower is always in advance with his preparations. Unfortunately, war conditions are responsible for the present foul condition of hundreds of acres of fruit plantations which were previously clean and well cultivated. Post-war conditions have not been conducive to their speedy reclamation, and the frequent first effect of such conditions, a heavy crop of highly coloured fruit, has been apt to make growers somewhat callous about weeds; but I am convinced that many of the more surface-rooted bush

trees cannot stand this neglect for an indefinite period. This article advocates the clean plantation despite the cost, though to-day new methods of reducing that cost are being tried.

3. Fruit growers need to have their land in reasonably good heart at the time of planting both for soft and hard fruits. The soft fruits are mostly comparatively short lived. In most districts strawberries are past their prime in their fourth year. Black currants should be forced and cropped heavily before they can be overtaken by disease. Raspberries need the whereabouts to send up a fresh batch of sturdy cropping canes annually. These plants require to grow away strongly from the first. Our top fruits are in any case slow to come into cropping and we do not want to drag out the period of initial growth by early stunting. Yet on the other hand I am inclined to think that many growers are too generous in the early stages to their young trees, of which they seem to lose complete control as a result of indiscriminate forcing. The problem after such treatment is to restore the balance between wood growth and fruiting. The ground for top fruits requires to be in normally good heart; for the small fruits it may be more generously treated. Provided the ground is really clean of course, a prior crop of peas or beans would be admirable; but it must be remembered that these crops are apt to leave the ground foul. If a root crop is the one prior to planting, the ground can be well dunged or shodded for that, and this should suffice. Two tons of shoddy or twenty tons of dung per acre, ploughed in early in the autumn, would be a good and not uncommon preparation; for it must be remembered that these long-lived woody plants need a soil with considerable moisture-retaining capabilities. For a previous dressing for strawberries or raspberries a much more generous allowance of dung is often given.

*Treatment of Grass Land.*—If grass land is to be broken up for planting, it should be turned over very early. It is usually not the best practice to plant it with fruit the same season, as the ground is apt to remain puffy, and the trees consequently to "dry out." It must also be remembered that the old pasture is often full of wire-worm and hence it is rash to plant strawberries on such land. Sometimes even raspberries are badly attacked.

The question is often asked as to whether it is really bad to plant trees in grass without breaking up the pasture.

If a really first-class orchard is aimed at, it would be preferable to start trees on arable land and lay them down to grass when they had reached early maturity (from eight to ten years old); but it is to be wondered why more farmers on suitable soil do not plant up more of their home paddocks with fruit trees fairly widely apart. They would not to any extent depre-

ciate the pastures and, as our Kent cherry orchards show, when they cropped, they would be so much clear again.

The value of the work done at Woburn<sup>15</sup> by the late Mr. Spencer Pickering in pointing out the injurious effect of grass upon trees can hardly be overestimated in its application to young and maturing trees. Nor when trees are in cropping must grass be allowed to have everything its own way. It must never be "hayed," for instance. But provided the principle is realised that grass must be kept away from the roots of growing trees and that it must be kept manured and grazed under mature trees, quite good orchards may be raised without breaking up good pastures.

Special care must be taken in getting out holes sufficiently wide if trees are to be planted in established grass (at least 4 ft. in diameter); the ground should be well broken up and the turf may usefully be buried face downwards at the bottom of the hole, some soil replaced, and the trees then planted in the top "spit." This circle of ground around the trees must be kept cultivated and from time to time extended as the branches expand. By following such methods for a period of years quite good standard trees can be grown on grass. It is often convenient so to plant a home orchard.

Finally some preparations are necessary for protecting the trees and the ultimate crops. In the first night after planting a single hare or a few rabbits may do untold or irretrievable damage. Straying stock and ill-intentioned human beings equally need guarding against. By far the most satisfactory plan is to wire in the whole plantation, with the wire buried deep enough to prevent burrowing and carried high and taut enough to keep out other intruders. This should be done before planting is commenced. All temporary expedients of protection are courting trouble and loss in these days of expensive trees. Rabbits are never known to attack the soft fruits or strawberries. Apples and pears they prefer. In sudden emergencies it is, of course, possible to mix up or buy dressings to smear upon the trees, obnoxious to rabbits and hares, but these are only semi-permanent. In no case should coal tar be resorted to. If the price of wire is prohibitive one can devise adequate, if less satisfactory, methods of protecting the young tree trunks. Staking and careful tying are nearly always necessary until the trees have become storm-firm.

#### 4. PLANNING AND PLANTING A FRUIT FARM.—VARJETAL CHARACTERISTICS.

*Planning.*—Reference has already been made to the necessity for forethought on the part of the would-be grower in selecting

a holding. Forethought is even more necessary in the planning of a plantation. So many plantations are badly planned and become difficult to work because the planter has never visualised what his work will look like in fifteen years. He has not even thought what he wants it to look like.

A plantation is best evolved through a process of thinking backwards from the ultimate distance required by the permanent trees down to the possibilities of intercropping in various ways for some years to ensure early returns.

*The Plantation and Grass Orchard.*—At the outset the grower should ask himself if he is planning for a permanent plantation to be kept under cultivation, for a plantation to be gradually thinned and finally laid down to grass, or for a grass orchard. Local conditions and personal preference will partly influence him in this decision, though the varieties of fruit he intends to grow should be a deciding factor.

Given equal chances, probably the permanently cultivated plantation of bush trees on a good stock will give the finest quality dessert fruit. It is well under control for pruning and spraying. Against these facts must be set the additional cost of cultivating and of more elaborate pruning, matters of real consideration upon heavier soils, and in some sparsely populated districts. It would be preferable not to attempt a plantation if the risk of having to let it "go down to weeds" seems possible; the results of such treatment are likely to be cumulative, especially upon dwarf trees.

In the days of "cheap" labour, which we can only hope are never to return, when every acre was hand dug and hand hoed, the mixed plantation of top-, bush-fruits, and strawberries or vegetables was based upon sound economic planning. The half-standard trees at 24 to 30 ft. were not expected to crop for ten or twelve years, so bush trees (supposed to be dwarfs) were interplanted at 12 or 15 ft. or even less. These were expected to bear a profitable crop in five or six years. Between these again were planted soft fruits, currants or gooseberries, at 6 ft., so that a return might be had from the third year onward. Even the 6-foot alleys were frequently cropped with strawberries, potatoes or other vegetable crops to give an immediate return. All this needed constant hand labour and generous manuring, and under these circumstances often gave handsome returns; but to-day the grower should hesitate a long time before embarking on such intensive work, unless the acreage to be planted was capable of being controlled by one or two men, *i.e.* 10 acres at most.

The idea of the mixed plantation was first to eliminate the strawberries (say at five years), then the currants and gooseberries say at ten or twelve, then the bush trees or fillers

at eighteen to twenty years, and ultimately to leave the whole ground to the fully developed half-standards or standards when they arrived at full cropping.

*Distances.*—In point of fact, these mixed plantations were frequently planted too close ; too hard pruning and too generous manuring delayed the cropping of the bush trees, and many growers had not the courage to grub them out when they should have been for the sake of the permanent trees. The results were disastrous overcrowding. At the other extreme the poorer grower sometimes overcropped his ground with catch crops and failed to replace in the way of manure what they had taken out. It proved impossible to cultivate plantations as required in war-time, with the result that many a fine acre of fruit has been grievously damaged. We now turn our pigs and chickens and ducks into these once trim fruit gardens and rely on them to do the reclaiming. Their efforts are beyond praise, but it is well to think twice to-day before planting any fruit on a plan which would not allow of sending a horse, or a tractor, north and south, east and west, and diagonally, and that not only whilst the trees were young, but permanently. There is a good deal to be said for planting soft fruits by themselves and trees and bushes by themselves. Anyway, we have all learned to plant farther apart and to plan our plantations to enable tractor work to be done. Of course the distance apart for planting must be governed by variety, by stock and by soil, but if it be necessary to generalise it would be preferable to plant standards and half-standards at 30 and 40 ft., bushes at 15 and 20 ft., and soft fruits at 6 or 7 ft. between the rows, rather than at the much closer distances of the past. Much good fruit land is dear, and therefore we have planted close to make the most of it. But we have bought our experience dearly. Overcrowding is injurious ; lack of cultivation in many cases proves equally so.

The orchard of standard trees to be laid down to grass will of course give heavy crops when it comes into bearing ; it needs less pruning and little cultivation ; but against that must be put the additional cost of picking and spraying, and the lessened effectiveness of the latter. It is slow to crop and it involves the keeping of sheep. Perhaps the ideally planned fruit farm would contain both orchard and cultivated land. Enough has been said here to indicate the kind of planning to be recommended. Many other writers<sup>16</sup> have given very clearly the different methods of setting out a plantation on the square, the quincunx or hexagonal plan, so that there is no need to repeat that here ; suffice it to say that careful planning, straight lines and reasonable economy of ground are necessary.

*Choice of Varieties.*—There is, however, another aspect of the planning question which must be mentioned: that is the all-important one of suitable varieties. It has been hinted elsewhere that soil, situation and climatic conditions will largely dictate not only the kind of fruit that can best be grown and the method of growing it, but also the actual varieties that will thrive best.

The problem is not as complex as it may seem at first sight, for, though there are many varieties of apples, pears, plums and cherries, only a very limited number are proved commercially and are therefore worthy of growing economically.<sup>17, 18</sup>

*Special Suitabilities.*—Of the dozen or fifteen commercial varieties of apple grown in this country it is not so difficult to pick out a few leading sorts that will do well under any particular conditions. But let it be remembered that certain varieties are eminently suitable for one special purpose, others for a different one. Amongst apples, for instance, Bramleys, Newton Wonder, Annie Elizabeth or Blenheim Orange are eminently fitted for standards or half-standards, whilst Lane's Prince Albert, Early Victoria and Cox's Orange Pippin are best fitted for bush fillers. Again some varieties are very upright in growth, such as Worcester Pearmain, Lord Derby or Annie Elizabeth, whilst others like Bramley Seedling, Beauty of Bath and Norfolk Beauty tend to be spreading.<sup>17, 37</sup>

In planning a plantation properly, full use should be made of such characteristics by alternate planting and so forth. Similarly in plums one might contrast the uprightness of Monarch and Czar with the spreading habit of Victoria or River's Early Prolific; or again the early maturity of Victoria, with the slower development of Belle de Louvain.

*Cross Pollination.*—Another varietal characteristic to be considered is the period of blossoming. It is desirable from two points of view to have varieties planted together which blossom at a similar period. In the first place, it accelerates spraying operations, so that adjoining varieties, where necessary, may all be sprayed at the same time. Secondly, it is desirable from the point of view of cross fertilisation, which has now been proved to be a very vital factor in obtaining successful crops. From time to time lists have been published<sup>79-84</sup> of the relative times of flowering of varieties, of varieties which will cross fertilise other varieties, and of varieties that are self-fertile. All these things are of real practical importance in planning the modern plantation for the best possible chance of success; they are not merely interesting scientific data to be relegated to a dusty shelf.

*Length of Life.*—The planning should also be guided by the period of maturity and relative durability of different varieties

One may, for instance, see cherry orchards atrociously planted simply because the planter had never reckoned on the sweet cherries outlasting the acid by at least thirty years. Where the acid cherries might have been used as fillers between the sweet varieties, they had been treated as equally permanent trees, even planted equi-distant, and the result was not only unsightly but a waste of space. There is much too general lack of appreciation of what varictal characteristics really mean. In actual fact, as will be shown, they are the only key to intelligent pruning, to effective and economic spraying and even to general treatment.

*Accurate Naming.*—Like human beings, trees have their special susceptibilities, but only too frequently varieties liable and not liable to a particular disease are sprayed indiscriminately as a preventive. This neglect of variety begins in the inaccuracy in naming of plants with which we seem satisfied. Constantly we are finding a single variety under different names, and different varieties under a single name; especially is this true of the soft fruits. No better instance can be given than that of a large jam firm who were anxious to purchase a particular raspberry in quantity—"Baumforth's Seedling." It possessed the brightness of colour, the juiciness, the amount of acidity, for their purpose. They bought 60,000 canes of a variety sold them under that name, but with totally different qualities. After they had waited for them to crop, they proved to be the wrong variety and had all to be ploughed up. The 60,000 canes were wasted, the fruit borne was inferior, two years had been lost, and the ground rendered unsuitable for replanting with raspberries. Case after case of this sort could be quoted.

There are not a large number of varieties of any fruit worth the commercial man's study, but certainly before planting he should make every effort to know the chief characters of the sorts he proposes planting.<sup>21-24</sup> Every care should be taken in obtaining true and unmixed stock. For instance, the grower should not be satisfied to buy "black currant" bushes, he should make sure of obtaining the particular variety most likely to suit his conditions.

*New Fruits.*—From the pomologist's point of view, and from the amateur's, novelties and multiplicity of varieties are of absorbing interest; but, generally speaking, from the point of view of the commercial grower his choice is bounded by very narrow limits. True, from time to time, new introductions prove of real commercial worth and replace less-favoured and constitutionally weaker varieties, as for instance, when the Early Victoria Apple replaced other early codlins, and to-day when new varieties of plums such as Giant Prune and Purple Egg are rapidly coming

to the fore. The up-to-date grower, with anything from 10 to 30 acres, is on the alert and often keeps a small trial ground for such new things, but the bulk of his plantations will contain at most five or six recognised commercial apples chosen deliberately by him in the knowledge that the greater the bulk of these sorts the better they will sell.

It is impossible here to give lists of varieties of fruits. The Ministry of Agriculture has issued leaflets<sup>4</sup> describing the chief commercial sorts and their suitabilities in detail; it is only for me to emphasise the necessity for discrimination in choice and the use to which particular varieties are put. In some districts special local sorts are known to thrive and are cultivated extensively—for instance, plums such as the Pershore or Blaunden or the D'Arcy Spice Apple in parts of Essex. In such matters local knowledge is worth following.

*Age of Trees for Planting.*—From the commercial grower's point of view, the young tree is the only tree to plant. For all bush purposes I would prefer to plant only good maiden trees.

Only in my garden would I plant bush trees over three years old. Half-standard or standard trees should not be more than three or four years old. It is largely a question of the more developed root systems feeling the shock of moving. The maiden tree hardly feels it.

I am quite aware that on occasions much older trees have been successfully transplanted and nursed with care into making a respectable plantation, but it is largely a matter of luck with the season following, and frequently several years elapse before the trees recover.

*Details of Planting.*—There is little doubt that the sooner trees can be planted after lifting the better. Roots suffer from exposure, especially to driving wind. Where young trees are lifted and replanted at once it is remarkable how little check they receive. The question of deep and shallow planting must be governed largely by the nature of the soil and partly by the kind of stock. On well-aerated soils deep planting does no harm and frequently gives additional vigour, but in shallow soils over heavy clay it is often advisable to plant practically on the surface of the ground. Trees on many of the fibrous-rooting stocks, such as the quince and some types of so-called Paradise, which readily make new adventitious roots, thrive better if deeply planted, but some of the less readily adaptable root systems may quite well be "smothered" by too deep planting.

Controversy has raged round the very interesting results obtained by Mr. Spencer Pickering<sup>25</sup> with regard to the actual method of planting. He found that by far the most important part of the process was to get the soil into the closest possible

contact with the roots. This could most effectively be done by ramming the soil round the roots. Injuries caused to roots in the process were comparatively of no import compared with the value of very firm planting. Mr. Pickering repeated his experiments again and again on many soils, and with great care, practically always with the same conclusions. We can but accept the facts as they stand. The firmer the tree is planted, the closer the contact between roots and soil particles, the fewer the air spaces, the better will be the young tree's start in life in the coming year, a start from which it does not look back.

#### 5. THE RAISING AND SELECTION OF YOUNG FRUIT TREES AND BUSHES AND THE EFFECT OF ROOT STOCKS.

With the exception of certain stocks which are raised from seed, upon which cultivated varieties of fruits are "worked," only the plant breeder to-day raises his trees and bushes by this method of sowing seed. The nurseryman and fruit grower rely almost entirely upon various methods of vegetative propagation.

*Propagation of Soft Fruits.*—The case of the soft fruits is perhaps the most simple. The strawberry, raspberry and even loganberry naturally reproduce themselves from surface or underground runners from the parent plant, and, with but few exceptions, these reproduce themselves true to type.

The gooseberry and red and black currant are normally propagated by ordinary hard wood cuttings, more occasionally by layers. Thus all the soft fruits may be said to be grown upon their own roots, in distinction to the hard or tree fruits which are practically always "worked," i.e. budded or grafted upon a foreign root system. Before discussing the methods of raising the tree fruits, it may be well to utter a word of caution about the methods by which the soft fruits are propagated.

*Proper Selection of Strain and Stock.*—In the case of strawberries it is often thought that any runner is equally good, a single plant being capable of producing quite a large number of runners in any one season. There is, however, some ground for the belief<sup>28</sup> that if more attention is given to the selection of the first, or even second runner from a strawberry plant, which is kept from fruiting and also from making further runners, the resulting yield and even earliness of fruiting may be thus increased. There is, moreover, some evidence to show<sup>27</sup> that plants of a single variety such as Royal Sovereign obtained from different sources may give very different results. This may be due, either to the existence of particular strains of a variety or possibly to change in soil and climatic conditions. In the case of the raspberry it is well worth considering similar

aspects. On rich soils, and with strong-growing varieties, it is often better to select even second- or third-quality canes for starting, rather than choosing the strongest-growing canes. On the other hand, of course, very weak spawn is rarely of much use for establishing the new raspberry bed.

With regard to general treatment of hard wood cuttings for currants and gooseberries, material for this purpose generally becomes available after the winter pruning has taken place. One-year growths of medium sturdiness, healthy and well ripened, are generally selected from these prunings. Such is the normal method of the commercial grower, and it will probably be some time before one can convince him that a more detailed selection is well worth while from an economic point of view. Especially is this the case with the black currant. Indeed it is being urged to-day that the only successful method of growing this highly remunerative fruit is by a very careful selection of cuttings from marked bushes of known health and cropping qualities. Fortunately, neither the red currant nor the gooseberry is seriously affected by any disease so difficult of detection as "Reversion," especially in the winter, but even in these cases judicious selection of cuttings free from *aphis* damage and gooseberry mildew should be insisted upon.

*Treatment of Cuttings.*—With regard to the treatment of such cuttings generally, very often the tendency is to plant them too shallow, with the result that, in a dry season, there is a high percentage of failures. If the cuttings are made about the length of the span between one's thumb and little finger, a useful measurement which one always carries about with one, they will give ample length, and some two-thirds of this cutting (about 5 in.) should be below ground-level, leaving the top 2 or 3 in., with probably two or three buds above ground to form the nucleus of the new branches. Such cuttings are usually best left in the nursery rows for two years before they are removed into their permanent places. At the end of the first year, the two or three new growths that have been made should be cut hard back to within a few buds, in order to induce strong growth in the following season. It is never worth while crowding cuttings too close, as these young bushes do not want to receive any check in the early stages. It is, of course, necessary to keep them clean from *aphis* attack, from gooseberry mildew and from weeds, otherwise they should require little looking after besides ordinary hoeing.

*Propagation of Hard Fruits.*—The practice with the tree or hard fruits is, generally speaking, quite different. There are a few interesting exceptions, especially in the case of plums, where certain local varieties are simply raised from suckers upon their own roots, but normally all these fruits are either

budded or grafted upon an already established root system called the "Stock." Now whilst the grower will almost inevitably have to look to a large extent to his own soft fruits for keeping him supplied with young material, the case of the budded or grafted tree is a very different one. Fruit-tree propagation is quite a specialised part of the industry and should only be undertaken by those who are really experts.

*Budded and Grafted Trees.*—Therefore, whilst it is not proposed to enter into the details of the methods of budding and grafting, which have already several times been minutely described,<sup>26</sup> it is well to emphasise certain points with regard to the raising of trees, as it is of such vital importance that the new plantation should be started from the beginning upon the right lines. It has already been mentioned that with a few exceptions trees are grafted or budded, a method of vegetative propagation which has probably arisen because many of the tree fruits do not make roots readily of themselves. Thus the method of budding or grafting is a quicker and surer method, and it is also supposed to bring the tree into a remunerative condition at an earlier date. It is, however, interesting to note that where trees have been grown upon their own roots they do in many cases seem to display not only a greater resistance to disease but also very sure cropping qualities. Such instances may be cited as the Pershore Plum, the Blaunden Red Plum and several others. Whether this principle is capable of extension or would even be desirable still remains to be proved. Meanwhile it has been quite clearly demonstrated that through the process of budding or grafting upon selected root systems it is possible very materially to control the tree, not only in regard to its size and period of coming into cropping, but also its health.

It is clear that the process of budding and grafting involves two considerations:—

First, the part known to the grower as the Stock or root. Second, the part known to the grower as the "Scion," which is the bud or graft taken from the tree. How far one can improve a particular variety or obtain a greater uniformity within that variety by selecting the Scion, say from a heavy cropping tree or one bearing especially highly coloured fruit, yet remains to be proved in this country. For some years past many Americans have emphasised the importance of bud selection, and some scientific research has gone to show that at any rate in the case of citrus fruits this is an important factor. We have little yet to go upon in this country. On the other hand, it is now placed beyond dispute that the tree can be almost at will influenced for better or worse by the selection of a stock or root.

*Root Stock Influence.*—So far, more complete results have been obtained in the case of the apple than with other fruits, and it is therefore best to explain the situation with regard to that fruit first. As far back as 1912, a joint programme of research was drawn up by the respective authorities at Long Ashton and East Malling to investigate the whole question of apple stocks. The work at both stations has forced the conclusion that at any rate to-day such divisions as Crab and Paradise are purely arbitrary and except in so far as they express the fact that the one group of stocks, the "Crab" or "Free," are raised from seed, and the other group, the "Paradise," are raised vegetatively from layers, such grouping is meaningless.

It is best then at the outset to clear our minds of these traditional groupings and to start altogether on a fresh basis. The "Crab" or "Free" stocks raised from pips were all reputed to be coarse and deep rooted, to be vigorous in growth and to be suitable as a class for standard trees. The "Paradise," on the other hand, raised from layers, was supposed to be surface and fibrous rooted, and in all cases to give more or less of a dwarfing influence. The research work already referred to has shown, as might be expected, that the Seedling (Crab) stocks contain an infinite variety of deep and shallow, coarse and fibrous-rooted individuals,<sup>29</sup> some of which make vigorous trees and others dwarfs. Again the so-called "Paradise" stock comprises a considerable number of types,<sup>30</sup> amongst which are to be found almost as great variation as amongst the "Crab" stocks. It will, however, be obvious to every one conversant with the first principles of plant raising that whilst it is possible by vegetative propagation to keep true to type and standardise desirable stocks for particular purposes, the method of raising stocks from seed, as in the case of "Crabs," is always likely to produce great variations. Therefore, in order to obtain our trees upon root systems of which we know the probable influence, it is desirable as far as possible to raise both the dwarfing and the vigorous stocks by vegetative methods, and so far there seems every reason to suppose that stocks raised by these methods will be satisfactory.

The foregoing remarks presuppose that it has been proved that the root of the tree can influence the variety worked upon it, and since during the past few years there has been a fairly copious literature dealing with these proofs, there is no necessity to elaborate such details here. Suffice it to say that there is clear proof not only that the root system affects the size and early precocity or bearing power of the tree to a very remarkable extent, but also certain other highly important conditions, such as root anchorage, the suckering of the stock itself, and, to some degree, the resistance of certain varieties to particular



FIG. I.—Lane's Prince Albert Apple in third year. On Broadleaved English Paradise (Type I). Note vigorous growth and no bloom.

diseases.<sup>30-33</sup> Probably every apple grower has from time to time been disappointed in the lack of uniformity of a particular variety in his plantations; probably he has been surprised

because many of the trees that he bought as dwarf fillers, have made large permanent bushes slow to come into cropping, whilst others, even amongst his so-called strong-growing standards, have hung back, stunted and diseased, probably to end an uneconomic life by being blown over in some high gale. We now know that many of these unexpected and disappointing results are due to the influence of the root, which has not been selected with sufficient care. As far as results have gone to-day, it seems possible to say with considerable certainty that by selecting four types of apple stocks, which can be vegetatively raised, the grower can find all the types of root he is likely to require for the different purposes for which he acquires trees. The great majority of nursery firms in this country are to-day in possession of these types of stock, and, in a large number of cases, are already in a position to offer trees in quantity upon them. Briefly the position may be summarised as follows:—

(a) The very dwarfing class of stock, which tends to make miniature trees, quick to crop, most suitable for cordon growing, or for very dwarf filler trees probably of short life. The stock that best serves this purpose is known to the trade as the *Jaune de Metz* or *Yellow Paradise* (Malling Type IX). It has a restricted root system, and if used for bush trees it would require staking. It should be remembered in buying trees upon this particular stock that the fact that their growth is dwarfed is not a sign of ill-health, but of the early precocity for which presumably they are being purchased.

(b) The semi-dwarfing class for bush trees, which are desired to be more or less permanent, but also to act as fillers, by coming into cropping at a fairly early age. The stock which serves this purpose best, the *Doucain* or *English Paradise* (Malling Type II), has long been known in Western Europe, but it has not always been kept true to type. The *Improved Doucain* (Malling Type V) is a very similar stock. Here again the bush trees, especially of varieties liable to make heavy heads, should be given a stake.

(c) The vigorous class of stock most suitable for very large permanent bushes, weak-growing varieties or poor soils. The true Broadleaved *English Paradise* (Malling Type I), introduced by Messrs. Rivers about 1860, serves these purposes admirably and on a good soil makes no mean standard tree. The *Nonsuch* (Malling Type VI), another stock introduced by this firm, has a somewhat similar influence.

(d) The very vigorous class of stock required only for large orchard standard trees or for very weak varieties. As has been previously stated, up to the present only seedling stocks have been in general use for this purpose; but the Research Stations have found that there are plenty of stocks serving

this purpose, which can be easily raised vegetatively and so standardised. At the present time two such stocks known as Malling Types XIII and XVI seem to be liked by the Nursery Trade for the results they have given, and they are being put



FIG. II.—Lane's Prince Albert in third year. On Doucain (Type II). Compare with Figure I. Note more dwarf growth and early bloom showing effect of stock.

into fairly wide distribution. They at least point the way to getting over the difficulty of the use of indiscriminate seedlings.

Until the work has proceeded further, and possibly new principles or causes for fresh selections appear, these four groups of stock would seem to satisfy the requirements of the tree buyer.

With regard to pears, there have here again always been supposed to be but two classes of stock, the Quince, raised from layers, used for all dwarfing purposes, and the so-called "Free"

or "Wild" Pear Stock, raised from pips, for standard trees. Work on this subject<sup>31</sup> has proceeded far enough to show that though the effect of the Quince root certainly does dwarf the pear, several varieties of the Quince in use seem quite undesirable even for this purpose, and it is safest to-day to ask for trees upon the true Angers Quince (Malling Type A), or the Common Quince (Malling Type B), which appears slightly more dwarfing. The case of so-called "Free" Pear Stocks, as was only to be expected, is similar to that of the seedling Apple Stocks: the variations are infinite, but sufficient time has not yet elapsed to allow of the standardisation by vegetative raising of selected free Pear Stocks, though this seems a possibility. As a rule to-day the commercial grower nearly always grows his pears upon Quince Stocks, since, speaking generally, pears worked upon the "Free" stock are very slow to come into bearing. For those who are buying trees for standard pears the best method at the moment is to visit the nursery bed and select those which show the greatest promise in the early stages.

The question of the best stock for plums is one which is occupying considerable attention in view of the hope that growers hold that it may be possible to control, if not to eliminate, the disease of Silver Leaf, which is at present devastating our plum plantations, through the root. Whilst there is as yet no definite evidence that it would be possible to control such a disease through the root, or even to increase the degree of resistance of the plant through such a channel, there exist amongst growers some scattered observations which tend to encourage the hope that there may be some possibility of at least improving resistance by a suitable selection of stocks.

Unfortunately, work along this line has had to proceed slowly, because it was found that the stocks for plums in common use were of so many sorts, so mixed up, and so often raised from seed, that a very careful selection and classification period has had to intervene.<sup>32</sup> One thing seems very certain in the light of present evidence: it is very undesirable that indiscriminate suckers grubbed up from growers' plantations should be used as stocks. There is some evidence to show that most varieties of plum worked upon the Myrobalan Plum Stock make the largest trees and are somewhat slow to come into bearing. At the other end of the scale, stocks such as the Mussel, the Common Plum and the St. Julien appear to have a slightly more dwarfing effect upon the tree, and, in some instances, it is claimed that the less rank growth which results helps to make the tree more resistant to the dreaded disease. Further work is needed to test these impressions, and it is hoped that results may not be very long delayed. One thing is quite certain, that for the grower in general to attempt to bud or graft plums upon

unknown stocks himself is highly dangerous, since very delicate questions of the incompatibility of certain varieties with certain stocks are involved.

However, the grower to-day might well be more precise in making inquiries and in stating his requirements about the stocks on which all his trees are worked. From every point of view the accumulation of evidence as to the effect of the roots is highly desirable, and the grower cannot pay too much attention to such developments.

#### 6. ANNUAL OPERATIONS AMONGST FRUIT.

It is hardly necessary to-day to emphasise the fact that the modern fruit grower cannot merely plant his trees and then wait for the fruit to come. Whether he be merely the producer of fruit from grass orchards, or the man more fully occupied with a succession of soft or hardy fruits produced under intensive conditions, he should have before him an annual calendar of events, embracing the most essential operations that he must perform from time to time, if he is to maintain health in his trees and quality in his fruit. The four principal operations that lend themselves to more or less general description under this heading are : (1) Cultivation ; (2) Pruning ; (3) The Prevention of Diseases and Pests ; (4) Manuring. Each of these items must be considered in detail, as the proper application of the underlying principles spells the whole difference between economic success or failure.

*The Grass Orchard.*—The man who merely grows fruit in grass orchards usually contemplates a much simpler calendar of events than does the intensive fruit farmer. After the first few years of cultivation around his newly planted trees, the details of which have already been referred to, his ground cultivations cease, except in so far as any good pasture farmer would look after the quality of his grass with the appropriate harrowings and rollings. With regard to pruning, most of the varieties of fruit suitable for orchard planting are either strong-growing sorts, which as will be shown later, need comparatively little pruning, or else stone fruits, such as Cherries and Plums, which again are better largely left to themselves. Thus the orchard grower's pruning operations largely resolve themselves into an annual or even biennial thinning out of crossing branches and the cutting out of dead or diseased ones. Again orchard standards are obviously less amenable to the ordinary methods of spraying. Indeed, it is fairly certain that most spraying operations upon standard trees, especially for the control of such things as Black Spot on the apple or pear, must be far less effective than on bush trees. Besides this, the orchard

grower has got to think twice before using many of the poison sprays whilst he has grazing stock beneath the trees. Finally, the question of expense weighs with him.

Higher-power machinery and a much larger quantity of wash are necessary for the thorough spraying of an orchard, and thus it is that, except in cases of severe caterpillar epidemics, the average orchard does not as a rule receive the amount of spraying which is given to the bush plantations. From time to time the standard trees receive some form of caustic winter wash for general cleaning purposes. Apart from this, probably the most normal preventive operations in the orchard are the application of grease bands or hay bands around the trunks of the trees, in the first instance to trap the female Winter and March moths, and in the second, the grub of the codlin moth. These considerations about spraying make it very essential that the orchard grower should be most careful in his selection of varieties, choosing those known to require the least amount of spraying attention. It is always rather puzzling to see growers selecting for tall standard work a variety such as Worcester Pearmain or Ecklinville Seedling. These are well known to be especially prone to Black Spot, and are therefore certain to require much spraying attention if fruit of the best quality is to be grown. Finally his manuring operations, apart from the improvement of his pastures by judicious liming or the applying of basic slag, should be largely regulated for him by the generosity with which he "cakes" and "corn feeds" his sheep. All these operations from the intensive grower's point of view assume much more serious proportions.

*Cultivations in the Plantation.*—That a revolution in methods of dealing with the cultivations in the ordinary plantation is not only necessary, but is actually in progress, has already been hinted at.

The operations which, in the past, were generally accepted as being absolutely necessary, were first the turning over of the top spit of soil once every year during the winter months. This was followed on most types of soil in early spring by a levelling or a breaking down of the roughly upturned clods. This levelling was followed throughout the growing season by two or more light surface cultivations, the object of which was to keep the land clean from weeds, and provide a good surface "tilth" or "mulch." In the old system of low-stemmed bushes, closely planted and still more closely interplanted with soft fruits and even vegetables, nearly all this work had to be done by hand, with the possible exception that a one-horse light cultivator (Planet Junior) was used wherever possible to cultivate up the centres of the alleys. Shortage of labour during the war largely ruled out this amount of hand

work, and the altered conditions subsequently have not encouraged its revival. Growers have viewed the situation from two rather different points of view. On the one hand, there is the man fortunate enough to be in possession of a fairly maturing plantation on good holding land. He has perhaps not only not experienced the evil effects of letting his plantation fall down to grass and weeds, but has actually found that this lack of treatment has given him heavy crops of highly coloured fruit. Surely he will have to weigh against this the gradual deterioration in the vigour of his trees, and the probable accumulation of certain pests, likely to find an excellent harbour for hibernating in the rough grass beneath the trees.

Some growers appear to be finding the answer to these objections in the penning of pigs and the running of poultry beneath their trees ; and there is little doubt that, although there are certain disadvantages to these methods, especially where there are low bush trees, generally the benefits of these expedients far outweigh the disadvantages. In other cases may be seen plantations, that have gone down to grass, fairly successfully reclaimed by constant cultivation with tractor-drawn disc harrows.

On the other hand, there is a class of grower who still believes that clean cultivation, in the strictest sense of the word, is an essential to success. These men have set about grubbing their soft fruits and even thinning out their fillers, in order to make cultivations more possible in the once intensively planted fruit gardens. Trees with their branches drooping towards the ground and bush trees with their low branches have been cut up with a clean stem for the same purpose. But once horse implements and mechanical tractors are allowed into the plantation the danger of damaging trees is vastly increased, and the good grower takes every precaution to avoid these possibilities. It is to-day possible with the newly invented plantation ploughs, with adjustable handles and special "prattling," to plough quite close up to the main stems of the trees with a single horse. Although such ploughing cannot be very deep, which is possibly an advantage, especially where surface roots are concerned, it can be performed sufficiently well to turn in surface weeds. The spring and summer hoeings are largely done with light cultivators and harrows, and there have been a series of light plantation tractors introduced, many of which show considerable possibilities, especially on suitable soils. Perfection has not yet been reached with these light tractors, but at least there is promise of finding something that will at least do cultivation and shallow ploughing satisfactorily between trees planted at a reasonable distance. Many growers still believe in keeping the tractors sufficiently far from their tree trunks in order to avoid all possibility of damage, and the narrow slips

or tree rows are still dug, levelled and hoed by hand. Undoubtedly in the younger years of a plantation's life, especially when it consists largely of bush trees, the adherence to a strict programme of cultivations is wise; and, even when plantations come into heavy bearing, it is only reasonable to suppose that the life of the trees will be prolonged, if a good surface tilth is maintained.

#### 7. PRUNING.

The fact that there is probably more divergency of opinion amongst expert growers upon the question of pruning than upon almost any other operation is largely due to the many aspects that must be considered.

Generalisations do not always help to simplify matters. In the case of pruning, generalisations and the attempt to arrive at rule of thumb methods of practice have only led to the accentuation of seemingly contradictory experiences. On the other hand, this does not mean that there are not, in fact, certain general underlying principles applicable to different sets of circumstances. It simply means that these principles will point to different deductions with varying conditions. It is no exaggeration to say that hundreds of acres, of apples especially, are annually so badly pruned that not only are the trees very seriously damaged but their economic value or cropping period is indefinitely postponed. At the other end of the scale are thousands of acres producing only undersized poor quality, and diseased fruits because no methods of pruning are applied at all. In approaching the subject, therefore, it seems well at the outset to try to clear up some of the very diverse considerations which are likely to obscure the value of general principles.

The question of pruning the soft fruits must of course be dealt with separately. In illustrating the general principles it will be best to take the apple, the most universally grown and widely mispruned fruit, and subsequently to state where the other fruits require particular consideration.

*Factors Affecting Method of Pruning Apples.*—Some of the main factors affecting the methods and results of pruning may be briefly summarised as follows:—

(a) *Soil and Climatic Conditions.*—Though there is undoubtedly a comparative basis of truth in the attempts that have been made to divide varieties into groups such as strong and weak growing, soil conditions may very vitally affect a variety's vigour in such a respect. One of the best instances would be to compare the exuberant growth of Bramley's Seedling on some of the Kentish loams, planted none too far apart at 36 or 40 ft., with the comparatively dwarf growth of the same variety

hardly too closely planted at 10 or 12 ft. upon the Sussex clay. A hundred years ago William Cobbett was struck with the healthy yet moderate growth of the apple trees upon this soil. Now, although the fruit-bearing habit of the tree is probably not radically altered by the changed conditions, the variety is as it were "telescoped," and it is obviously absurd to apply the same method of pruning to the same variety under the two conditions. Unfortunately this sort of thing is only too often done.

Again climatic conditions, such as excessive rainfall, may, as has been shown at Long Ashton,<sup>35</sup> affect the development and position of the fruit buds, and normal rule of thumb methods of pruning may break down under such conditions, leaving an amount of unfurnished wood. It may, therefore, be necessary to evolve a special method of treatment under particular climatic conditions.

This perhaps may partly account for the fact that under our climatic conditions many American varieties of apple appear so refractory to our normal methods of pruning.

- (b) *Stock.*—After what has already been said in explanation of the influence of various stocks upon the tree's growth and fruit-bud formation, it must be obvious that whilst hard methods of pruning might not only not be injurious but might prove absolutely necessary upon a variety worked upon very dwarfing or semi-dwarfing roots, they would be quite unnecessary, and even possibly harmful, upon strong roots.
- (c) *The Purpose for which the Tree is Intended.*—At the outset when the tree is purchased as a bush or half-standard, upon dwarfing or vigorous stock, and is planted at close distances or far apart, the grower should have made up his mind on this point. Particular varieties on particular stocks are most suitable for "fillers" to crop early and then be removed, others are most suitable for "permanent" trees to be built up at leisure with a framework capable of bearing heavy crops for a long period of years. There are hundreds of cases in which intended "fillers" have been pruned in such a way that all the early returns have been checked, and just when these "fillers" should have been removed for the sake of the real "permanent" trees the grower finds himself faced with an over-crowded plantation, all due to come into bearing about the same time. He naturally grudges the removal of the

“fillers” that have so far been prevented from cropping by his own methods of pruning.

(d) *The Variety.*—Perhaps the most important consideration of all and the one that has certainly led to the greatest disappointment in the application of a universal rule of thumb method of pruning is that of Varietal Habit of Bearing.

*Grouping Varieties according to Habit of Growth.*—Though to some extent varietal habit of growth has been studied in the hope of giving a key to general principles, it has been studied rather from the point of view of shaping and spacing the tree than from that of finding out its natural inclination to form fruit buds in any particular position.

The grouping of varieties as strong growing and weak growing has a relative value, and given a knowledge of the considerations already enumerated, it may form a very hazy basis as to the severity or lightness with which the tree should be pruned.

A grouping such as “upright” and “spreading” is valuable in so far as it gives a clue as to whether to tip the leader (when tipping is necessary at all) to a bud pointing upwards or outwards. By such methods can the variety be “opened out” or made more compact.

*Habit of Fruit Bearing.*—But from the point of view of fruiting, and especially of obtaining early fruiting—for almost any variety will eventually crop as if in sheer desperation, however unintelligently handled—the key fact to know is where the variety naturally carries its fruit buds. Following closely upon that comes the important question as to how far by methods of pruning those natural habits can be accelerated, accentuated or the reverse. It may perhaps sound uncomplimentary to say that in a large number of instances the most valuable trees in a fruit plantation are those that the pruner has never touched, but from an educational point of view this is certainly true. The key to successful and intelligent pruning lies in a study of the natural habit of each variety. In an article of this scope it is impossible to enter into a detailed description of the habit of the principal commercial sorts. The work has been done elsewhere,<sup>17</sup> but in emphasising the value of such a study it will be possible to give one or two contrasting illustrations.

*Various Methods of Pruning.*—In some large fruit areas the word is still unknown; in others it merely signifies the cutting out of central or crossing branches or the thinning out of the tree. In many a garden the word pruning denotes the clipping back of every apparent new growth until in a few years the tree resembles a thick-set hedge, but to many an ardent pruner tree cutting has resolved itself into a series of processes known as opening out, spacing, tipping and spurring.

*Objects in Pruning Young Trees.*—With regard to the pruning of the young tree the objects are plain and there would to-day be

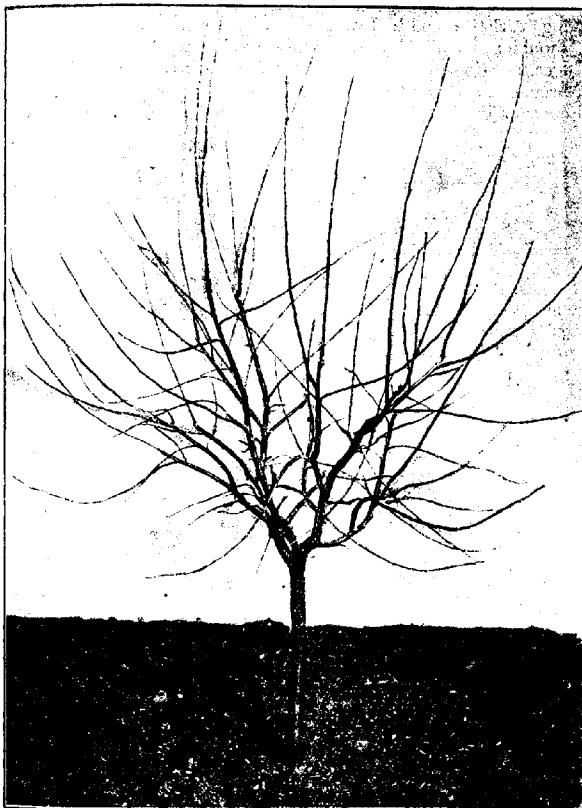


FIG. III.—Lane's Prince Albert Apple, showing natural habit and ready formation of fruit spurs.

little room for disagreement. The predominant ideas should be:—

- (1) To form a tree convenient for the type of cultivation and operation to which it is to be subjected,

There is first the general tendency to grow even our bush trees upon 18 in. to 24 in. legs in order to facilitate horse or tractor work.

There is the recognised method of cutting upward the spreading varieties and outward the very erect ones. Every one should strive to obtain a well-spaced, shapely, well-balanced tree, starting away with a foundation of three, or at most four, branches, and gradually extending the number year by year as space allows. These ideals are of course striven after in order that the picking may be easy, the spraying most effective, and the ground filled to the best purpose. There is still some divergence of opinion as to how far and how long the young tree should be kept "open centred," but it is only reasonable to suppose that no grower will follow a slavish rule, but will make the best use of his space so long as it is compatible with the easy working of his tree and the ready colouring of his fruit.

(2) To start the young transplanted tree into strong healthy growth so as to have plenty of wood to choose from for building up the framework of fruit-bearing branches. With this object in view the young tree is usually cut very hard the first season of pruning—to within a few inches of the older growth. This hard pruning may be continued more or less severely, for two or three seasons, more or less drastically according as to how far the tree responds to these early prunings.

All this time the predominating idea has been the making of a stout framework and the provision of ample branches, but from now onwards practice varies very much as to the duration of this period of hard leader cutting.

*Maintaining the Balance.*—Only too often it is carried out too long and too drastically, and the young tree has all its energies directed into the making of new wood shoots. Instead of attaining an equitable balance betwixt wood-making and fruit-bud formation, the pruner frequently loses control of his tree more and more as he cuts more furiously. From the fourth to the tenth year should be regarded as a very critical period in the permanent tree's life; whilst in the case of the "filler" properly treated, the necessary balance should be well established by the fifth or sixth year after planting. If the balance has been upset by too exuberant wood growth, it is best restored by letting the tree largely alone. If growth has been checked too much by fruiting, hard cutting must be resorted to. Once this balance is obtained, the objects or motives for pruning should take a new shape.

*Treatment of the Maturing Tree—Tipping and Spurring.*—Now is the time to consider the treatment of the maturing tree. Here a word of explanation is necessary with regard to the use

of the terms "tipping" and "spurring" as distinct from thinning out. The pruner usually distinguishes between two

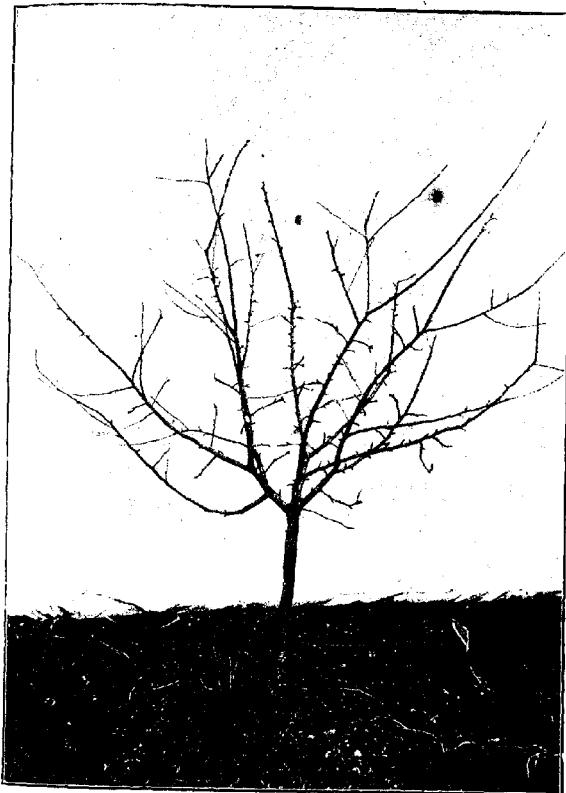


FIG. IV.—The same variety as No. III, tipped and spur-pruned, but before fifth season's pruning. Note that hard tipping makes many strong lateral growths.

classes of shoots on his tree: the "leaders" or main extensions of the branches, and the "laterals" or side shoots. "Tipping" refers to the cutting back of the main leaders, "spurring" to

the shortening of the laterals with a view to converting them into fruit spurs.<sup>34</sup>

It should of course be said that where a space requires filling or a new branch is required a "lateral" may, on occasion, be converted into a "leader." On the other hand, some "laterals" are considered too strong to "spur" and are therefore cut clean out at their base. Within limits, there is a very real relation between the closeness of "tipping" and the number of lateral shoots which result. In practice, this appears to be very rarely realised, with the result that a variety like Allington Pippin is frequently converted into something resembling a besom broom. If the leaders of this variety are only lightly tipped or left altogether untouched, comparatively few lateral shoots result and a very large number of natural fruit spurs are formed. The same applies in a considerable measure to such varieties as Lane's Prince Albert and Early Victoria.

On the other hand, certain varieties, if left entirely "untipped," fail to "furnish" their branches fully with spurs; such, for instance, are Prince Bismarck and Newton Wonder.

It is obvious then that the tipping of the mature tree must be regulated by such considerations. This does not necessarily mean either that Allington Pippin, and its class, should never be tipped at all, or that Bismarck and its class, should always be tipped severely. Different seasons and local conditions can alone decide in each case the amount of tipping necessary and the practical application of the general principle.

Similar considerations have to be kept in mind with regard to "spurring." Very short "spurring"—to half an inch or less—under most conditions, either delays the formation of fruit buds or actually kills the laterals. There is seldom any gain in cutting a lateral the first time shorter than to within one to one and a half inches. In some cases it may even be worth leaving it longer. Tree cutters often destroy the results of their spurring by cutting right back too soon to the first fruit bud that appears to have been formed. Spurs are always better worked back gradually. Whilst such judicious spurring, combined with intelligent tipping, is eminently suitable to such varieties as Lane's Prince Albert, Allington Pippin and Early Victoria, it is useless to apply it to certain other varieties, such as Bramley's Seedling, especially in their early stages. Intelligent spurring should of course allow for the "tip-bearing" habit whilst young of certain varieties such as Worcester Pearmain. At any rate, up to its eighth to tenth year this variety bears most of its fruit buds on the tips of short shoots from 3 to 18 in. in length. Wherever they will not overcrowd the tree, these shoots should be permitted to remain, and the tree can thus be brought into comparatively early bearing,

Thus it will be seen that the practices of both "tipping" and "spurring" can seldom be reduced to a rule of thumb.

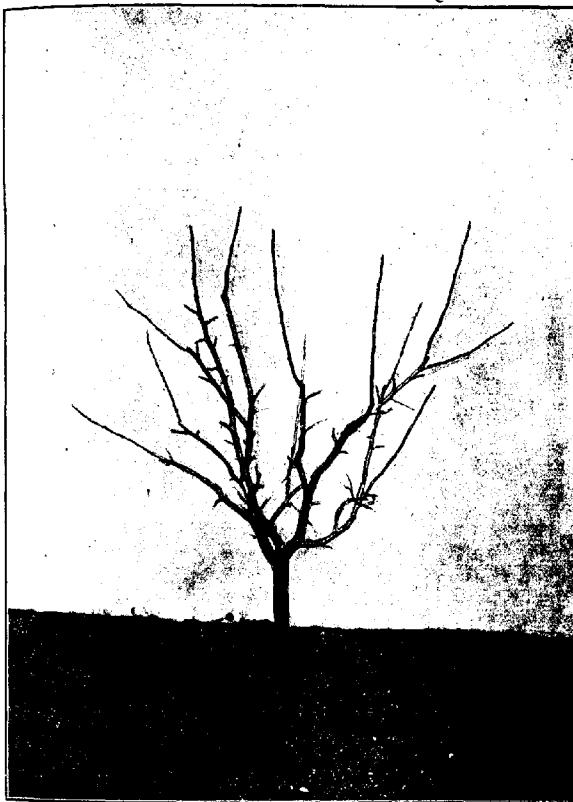


FIG. V.—The same tree as No. IV, only after fifth pruning. This illustrates well the methods of tipping and spurring, but it is rather too severe to bring early fruiting.

Apart from shaping the maturing tree, probably the most valuable effect of tipping is to maintain its vigour, and in some cases to furnish the branches with spurs. Whilst spurring also helps

to furnish the branches with fruit buds, probably the most important element is the thinning out of the tree. It has recently been shown<sup>37</sup> that in most cases a higher percentage of bloom sets on trees so treated.

If the main object were merely to produce a large quantity of blossom quickly, this would best be done by leaving the tree entirely unpruned. With most varieties the unpruned tree does indeed give the heavier and earlier crop, but this is often attained at the expense of the size and quality in fruit,<sup>37</sup> and of the shape of tree. However, where temporary fillers are concerned, these points are of relatively small importance, and in such cases little more than a mere thinning out of the tree is advisable.

There are several other considerations with regard to the advantages of intelligent pruning which cannot be entered into here in detail. Such, for instance, are the greater opportunities afforded for controlling such diseases as Apple Scab (Black Spot), Apple Mildew, and the Brown Rot and True Apple Cancers.<sup>37</sup> Many centres of infection can be annually removed, whilst the reasonably open tree can be sprayed much more effectively. Or again, it may be possible to some extent to control the tendency to biennial bearing, or the cropping of certain varieties in alternate years, through judicious pruning. It is at least a significant fact that this alternate cropping is usually complained of in orchard standards which receive little attention from the knife.

*Pears.*—It would appear that very little research work has as yet been undertaken with regard to studying the varietal characteristics of the commercial pears grown in this country. The reasons are not far to seek. The acreage under commercial pears—apart from the perry orchards—is as yet comparatively insignificant. The varieties grown, even including those of coarser quality such as "Chalks," "Hazels," or "Windsors" for wind breaks, are few. These varieties, such as Conference, Fertility and Dr. Jules Guyot, naturally form fruit spurs very readily, and, grown as they are upon dwarfing stocks, they quickly come into bearing, forming admirable "fillers" to give quick returns.

Commercially they are usually leader tipped and spur pruned, more or less drastically according to their state of growth. The same underlying principles that apply to apples would seem to apply here, too.

That pears have their very distinctive habits of growth, and even of bearing, is obvious to anyone who has walked through an old orchard of standard pears. That these characteristics will repay study is equally certain, but at the present time very little reliable data are forthcoming.



FIG. VI.—Showing use of Adjustable Cob Cultivator in young plantation of bush and half-standard fruit, intercropped with vegetables.

The varieties of pear grown commercially on quince are apt to start cropping very early, and unless the main leaders are

either tipped fairly hard annually or receive some artificial means of support, they are liable to be brought out and down with the heavy weight of fruit. Which of these methods one would employ should depend upon considerations of the earliness of cropping required and length of life expected of the particular bushes.

*The Stone Fruits.*—The questions which present themselves in relation to the pruning of the stone fruits are rather different from the cases we have been considering. This is due partly to the fact that in the great majority of cases the so-called fruit bearing spur of the stone fruits consists of a mixture of fruit- and wood buds, to a much greater extent than on the apple and pear, and that these spurs are not so easily capable of restriction. In other words, the stone fruits may be said to fruit mainly upon "extensions" of growth. The extreme case is found in that of the acid (Kentish, Flemish and Morello) cherries where the extensions of the last year's growths afford almost all the fruit-bearing wood.

Whilst this bare wood does not exist to the same extent upon the sweet cherries or upon most varieties of plums, these fruits do not respond readily to spur pruning, as recommended for apples and pears, and the attempt to furnish each branch with short closely arranged fruit spurs. The pruning of the stone fruits therefore resolves itself into the shaping of the young tree and the subsequent thinning out of the branches from time to time to prevent overcrowding and maintain sufficient vigour. Before cutting the stone fruits at all the grower at present always thinks twice. He knows that many of his best commercial varieties of plums and even cherries are especially liable to infection from Silver Leaf (*Stereum Purpureum*), and that at certain times of year the spores of this fungus are ready to infect any and every wound on the tree. The grower now knows that this fungus is widespread and often to be found upon the dead parts of timber-trees, shelter belts, and even gate posts upon his farm. Under these circumstances there is a tendency to shirk even shaping the young tree, and many a young plum tree with long spindly brittle branches, only awaits the first crop to have those branches broken down by weight of fruit, with the result that uglier wounds and gashes than are ever made with a pruning knife are to be found. No better example could be given than Victoria, the drooping habit of which necessitates tipping for a longer period than with most varieties.

Under these circumstances it is surely best to shape the young tree along more or less the same lines as have been suggested for other fruits. It should, however, be remembered that the stone fruits respond very readily to the knife and that therefore the cutting need not be too hard. The quicker a good foundation,



FIG. VII.—“Delayed-Dormant” lime washing on plantation of bush apples with small-manual machine.

capable of bearing a reasonable weight of fruit, is obtained the better. It might be accomplished in three or four years. From this time onwards the less the tree is touched with the knife the better, so long as branches are not allowed to cross and rub and the tree does not become too crowded. Dead wood should always be kept cut out, too.

Recent research with regard to the most highly infectious period of the Silver Leaf fungus<sup>47</sup> has led those engaged upon the subject to suggest the probability that the earlier on in the season this shaping or thinning can be done, the less the risk that is being run. In default of that, the later these operations are left the better. The most highly infectious period, of course, varies somewhat according to seasonal conditions, but from mid-September to the end of March is probably the most critical time. Perhaps the widely established Kent practice of starting to thin cherries whilst they are still in leaf and as soon as the fruit is picked has unconsciously kept our cherry orchards comparatively free from Silver Leaf.

*Summer Pruning.*—All the foregoing remarks upon the tree fruits refer to the operations generally described as winter pruning. There is at the present time insufficient published scientific data to warrant the recommendation of summer pruning to commercial growers, except in the case of certain dessert varieties where high colour is desired. In such cases it is only the lateral shoots that should be pruned, and these should be left some four or five inches long. These shoots are subsequently spur pruned in winter in the normal manner.

The Lorette system<sup>36</sup> as at present practised seems hardly likely to become a commercial proposition.

The same may be said of root pruning, which though it is valuable in garden practice, is too expensive a process on a large scale, except in the case of closely planted cordons. The ancient practice of "ringing" and "notching" refractory trees or branches, in order to make them produce fruit buds, has recently been under scientific investigation.<sup>35</sup> In the light of this knowledge, such methods accurately applied would appear far preferable to such treatment as root pruning.

*Pruning the Soft Fruits.*—Like the tree fruits in their early stages, the soft fruits require to be brought into vigorous growth and in the case of currants and gooseberries the bushes require shaping for convenience in picking, spraying and ripening the fruit. The pruning treatment of the various soft fruits appears to follow logically from the study of their natural habit of fruiting.

*Raspberries.*—The raspberry fruits mainly, with the exception of the autumnal varieties, upon the canes made in the previous season. Hence a constant supply of sturdy young

cane is necessary. Newly planted canes should be cut hard back, to within a few inches of the ground, the first year, to encourage new growth. From this time onwards the endeavour should be made to keep annually five or six strong canes to each stool, the rest either being cut out or taken away as rooted "spawn." Many growers consider it better, for the sake of the fruit, to keep all spawn hoed out during the growing season. In the latish spring each individual cane should be tipped, according to its strength, in order to induce it to furnish itself well with vigorous fruit-bearing branchlets. The tipping is usually left as late as possible in the hope of avoiding frost damage, but it is not yet certain whether this is either necessary or desirable. Autumn-fruiting varieties bear their best autumn crops upon canes of the current season's growth.

*Red Currants.*—The red currant fruits mainly from short spurs upon the old wood, and for this reason it is subjected to short spur pruning, all the lateral growths being cut in to within half an inch or so of the main branch. Owing to the brittleness of the wood of many red currants, such as Comet or Fay's Prolific, the leading shoots are tipped fairly hard each winter. The bush itself from the first is trained out in a bowl shape with at most seven or eight branches, each of which is tipped and spurred.

The red currant is often subjected to summer pruning in order to clear out the centre of the bush for ripening up the fruit. The process is known as "brutting." All the lateral shoots growing up in the centre of the bush are broken out over the blade of a knife to within two or three inches of their base. The idea of breaking instead of cutting is to prevent their shooting again. Subsequently these brutteted laterals are spurred in as described above. Such is the commercial practice which has so far not been called in question.

*Black Currants.*—Black currants fruit best upon the wood of the previous season's growth, though to some extent spurs grow out from the older wood and produce some fruit. The main principle of black currant pruning has therefore always been to prune away each year some of the old wood in order to induce and make room for a plentiful supply of new growth. Such pruning has varied from a mild thinning out in some plantations to a very drastic cutting away in others. Neither tipping nor spur pruning has been applied to black currants commercially to any extent.

In view of the troubles of the black currant grower, "Big Bud" and "Reversion," it has been suggested on the one hand that too hard pruning "lets in infection" and on the other that too light pruning leaves it in the bushes! It does not seem that at the present moment any reliable data have been pub-

lished to show any connection between pruning and these infestations. Of course, if bushes become infected and are left unpruned they appear much worse than those which have been pruned, and in the case of "Big Bud," at any rate, there must be more local sources of infection. In the light of present knowledge it is still advisable to encourage plenty of young wood growth whilst retaining as much as possible of what has been made in the previous season. The black currant does not require much "thinning." The great object should be to use all the available cropping wood as quickly as possible.

*Gooseberries.*—Gooseberries of different varieties<sup>19</sup> are amenable to either the form of pruning described for the red currant, *i.e.* light tipping of the leaders and hard spurring of the lateral shoots, or to that for the black currant, *i.e.* the leaving of as much young wood as possible, compatible with keeping the bush thinned out, and the fruiting mainly on the new extension growths. Varieties which do not make so much wood growth respond best to the former method, which, however, is very largely applied in districts where special large dessert varieties of berry are produced. It is reputed to give larger fruit. To some extent also the method of pruning chosen depends upon the way in which the bush is grown, either on a short stem or leg or else on the stool system, *i.e.* with the branches and suckers coming directly from the ground. It must be obvious that more wood growth is produced by the latter method, and it is not so readily suited to drastic spur pruning. Bushes grown on a leg, on the other hand, stand it better.

In the time and method of pruning gooseberries one other consideration must be mentioned. Some birds, especially finches, do a great deal of harm to the buds after the bushes have been thinned out. During a hard winter and even when the young buds are bursting, birds will strip the branches of them. In places this has proved so serious that it has become a regular practice to cover the bushes with cotton by the acre, immediately after pruning. Delaying the pruning till late will help to some extent. The bushes, on the other hand, should not be too much thinned out as the thorns help to keep birds out, especially on certain varieties, such as Warrington. Birds also, in some places, attack red currants in a similar way.

It is of course a golden rule in pruning that all diseased parts likely to carry infection, or to prove unhealthy, should be cut away.

#### 8. MANURING.

The question of manuring can most readily be dealt with by considering the hard or tree fruits and the small fruits separately.

*The Tree Fruits.*—With regard to the tree fruits, very little

accurate data of the results of different applications have at present been published, so that there exists little material to guide the practical grower as to manuring, except his own personal observations. The reason for this paucity of knowledge is obvious. Experimental manuring is a totally different thing upon an annual crop from what it is in dealing with plants of deep and wide root range, whose response to such treatment may be very slow. Such response may be delayed, negatived or even reversed by a series of different seasons.

Such experiments as have been undertaken, up to the present, can, at best, be said to have yielded negative results.<sup>42</sup> Results of the sort required, such as will demonstrate certain well-defined principles applicable to different soils and varieties, can only accumulate very slowly. The fact that more is known to-day about the roots of trees will help to facilitate matters.

This does not mean that the experienced grower has not accumulated, over a series of years, impressions sufficient to afford him preferences. These preferences are often very decided, but it is to be feared that in many cases, conclusions are based upon very slender evidence, which is apt to leave out of account special seasonal effects and almost universally ignores the conclusive use of "control" or "untreated" plots, side by side with the manured ones.

*Treatment of Young Trees.*—Something has already been said as to the general practice advisable in preparing the ground for planting young trees. From those remarks it will be gathered that the writer is not in favour of the over-forcing of the tree fruits in their early stages. It must be confessed that this conclusion is only based on observations upon the practice of various growers. It seems evident that in the early stages frequent and heavy dressings of such manures as dung, shoddy, fish or meat meal cause the trees to make a superabundance of growth which it is not always easy to check at a later stage. Moreover, upon certain varieties of apple, and possibly plum, this type of growth appears especially susceptible to disease. This does not imply that young trees are to be starved. The actual amount, nature and frequency of the dressing given must again depend very largely upon such circumstances as soil, stock, variety and methods of pruning and cultivation. If, for instance, the trees are being closely intercropped with soft fruit or vegetables they will most certainly need considerably more attention than would otherwise be the case. Too close planting of trees that are not really dwarfs, too drastic pruning, and too heavy manuring, combine to cause a real waste of time and money.

On a fairly light loam, over the "Kentish Rag," a normal plantation of bush and half-standard trees at 15 and 30 ft.

respectively, interplanted with black currants or raspberries at 7 ft. 6 in. between the tree rows, with a single intermediate row of potatoes or roots during the first three or four years, is as closely cropped as seems desirable. Given that the ground is in normal "good heart" at the outset, it seems possible to keep the trees in good growth and also to produce remunerative crops of roots and soft fruits by a manurial programme such as the following:—

*One Year.*—10-15 tons London Dung—ploughed in in autumn.

Light dressing, say 2 cwt., complete artificial manure sown up potato or root rows in spring.

*Alternate Year.*—25-30 cwt. Shoddy (6-8 per cent.) in autumn, light dressing fish or meat meal (say 5 cwt.) for the soft fruits in spring. Lime, when required, would be given in the year of the Shoddy dressing.

As soon as the intercropping ceases the manuring would change its character somewhat. The young fruit trees would then be maturing, the fillers should be cropping and these special requirements would have to be considered.

It can only be said in the light of observation and present knowledge that this sort of system does not seem excessive or extravagant and that it appears to yield satisfactory results. It is largely based on the assumption that it is necessary to keep plenty of humus and moisture retaining matter in the soil, and on the observation that too frequent dressings of dung force growth too much. Many fruit growers are especially partial to shoddies as being "slower acting." It will be noted that no special attempt has been made to supply the young trees with potash or phosphates—other than the potash they would obtain from the dung and incidentally what they might obtain from the "complete" artificial for the potatoes or the phosphates from the light dressings of fish or meat meal.

Some growers do indeed believe in these early stages in giving dressings of bone meal or bone flour to their trees, but positive evidence is still largely wanting as to whether the tree's growth or early productivity can be increased by such addition.

Again, if it prove that the main virtue in such dressings as dung and shoddy for young trees is their mechanical effect, this could of course be obtained in a much cheaper form, but there is certainly sufficient evidence to show that the application of nitrogenous manures to young trees does stimulate growth. How long they would go on growing normally and healthily without such stimulation on a soil "in good heart" must largely depend on that particular soil and its mechanical and moisture conditions. At the present time the aim must be

to avoid either losing control of the young tree by over-manuring or causing premature stunting of growth by withholding the necessary organic nitrogenous fertilisers. A mulch of dung or even shoddy around a young tree may often give it just the necessary start in life.

*The Cropping Tree.*—It is obvious that the maturing tree bearing a heavy crop can stand more manure than the tree that is still merely making wood growth. Once a plantation has come into regular bearing there is less fear of the danger of over-manuring. It is a very common maxim amongst the best growers that the best time to manure fruit trees is during or after a crop. That maxim is frequently translated into practice by "helping" trees whilst they are cropping, *i.e.* giving them some assistance once the fruit is set. It may take the form of a mulch of dung, or, more often, the hoeing in of a dressing of fish meal sometime in June. In Kent many good growers have long done this, and are convinced, in their own minds, that it not only helped the tree to mature its crop well, but assisted in preventing biennial bearing, or, in other words, aided the formation of fruit buds.

Recently some experiments,<sup>41</sup> along the lines of late summer or early autumn manuring of apples, to assist fruit-bud formation were reported upon as yielding satisfactory results. Unfortunately the data published were all too scanty, and the untimely deaths of the experimenters have robbed us not only of two horticultural enthusiasts, but temporarily, at least, of a possible elucidation of a question so vital to fruit growers. External reasoning would certainly suggest that this practice of "helping" the cropping tree is sound. Whether any particular application especially assists in the encouragement of fruit-bud formation remains to be proved.

The possibilities of the practice of "Green manuring" of fruit trees so largely applied overseas are as yet almost unexplored in this country. Our climatic conditions are of course by no means so favourable. Those who are progressive enough to experiment will find themselves limited to such quick-growing crops as mustard or rape, crimson clover or vetches.

The question of the value of lime to the top fruits and especially the stone fruits has been referred to elsewhere.

*The Small or Soft Fruits.*—The small fruits, cropping as they do from the second or third year onwards, have afforded a better opportunity for the accumulation of data with regard to manuring. Even here, as is more or less the case with all manurial results, their application is somewhat bounded by the particular soil conditions under which the trials were conducted.

Almost contemporaneously experiments were initiated, without collaboration and from rather different points of view,

at Woburn in Bedfordshire<sup>42</sup> and at Hadlow in Kent,<sup>39</sup> under very divergent conditions. In most cases the experiments were carried over periods of from ten to fifteen years, so that they were of sufficient duration to allow of seasonal conditions and see out the normal commercial life of the fruits experimented with. Certain very marked features stand out in both sets of experiments and encourage the hope that in the case of the soft fruits at least some general principles of wide application are beginning to appear.

*Strawberries and Raspberries.*—General commercial practice has long recognised the fact that without ample supplies of dung it is useless to embark upon strawberry or raspberry growing. Something has already been said as to the generous preparation of the soil for their reception. It is customary to give these fruits almost annual dressings of dung up to 25 tons per acre or shoddy up to two tons. If the latter is given, it is usually supplemented by light dressings, say 6 cwt., of meat or fish meal, rape dust or castor meal. The two latter are especially favoured in the case of raspberries.

Commercial practice occasionally resorts to the use of nitrate of soda to help on weakly strawberry crowns or encourage more cane-making among the raspberries. Experimental results largely bear out the observations of commercial growers, especially as far as the dung is concerned. At Woburn in the case of strawberries it was found that size and quality of berries and the longevity of the plants was thus increased, and even under unfavourable conditions the crop was also increased. The results at Hadlow emphasised even more the value of dung. In neither set of experiments did chemical fertilisers, either alone or in addition to dung, give very advantageous results. At Hadlow, artificials alone gave very poor ones, but the experiments also suggested that in different seasons the same artificial might give different results. At one time potash seemed actively detrimental, at another the application of phosphates and nitrate of soda seemed to give an early crop, but these results were by no means constant.

In the case of raspberries, the two sets of experiments emphasised even more clearly the benefit of dung and the almost negative influence as regards cropping and cane-making of the addition of artificials. Plots treated with artificials alone were little better than unmanured plots. The Hadlow results pointed to the fact that moderate dressings of dung (12½ tons per acre) gave as good results at double the quantity.

As has been pointed out, where dung is not available, growers resort to the use of shoddy with light dressings of more readily available organic meals. So far no experimental results applicable to fruit have been published as to the relative value of

this as against dung, though there is a very general expression of opinion that if it can be procured at an economic price nothing will quite take the place of dung.

*Gooseberries and Black Currants.*—In the case of gooseberries and black currants, experimental results have indicated very much the same line of practice, from the point of view of longevity and cropping. Complete artificials alone were not advisable. In the case of gooseberries, on the Woburn soil, artificials given in addition to dung gave little effect, if anything a deleterious one. At Hadlow, where artificials throughout appear to have given more definite results for good or bad, their addition to a moderate dressing of dung proved as good as a heavy dressing (25 tons) of dung alone. Whilst on the Woburn soil there was a suggestion that the addition of artificial phosphates actually did harm, at Hadlow the withholding of potash salts gave a very definite decrease in yield even when dung was applied.

Commercial practice in manuring the gooseberry undoubtedly relied in the past largely on dung, supplemented in years of heavy cropping by spring dressings of fish or rape. Artificials, it seems, were rarely applied. This practice has from time to time been somewhat modified owing to the epidemics of American Gooseberry Mildew. As with other fruits, applications of dung tend to encourage somewhat rapid wood growth, and hence afford the disease ample opportunity of spreading. For this reason, in the case of gooseberries, the slower-acting shoddis, supplemented with organic meals given judiciously, have become popular. It is safe to apply dung where its effects are properly understood. The Hadlow experiments gave an interesting indication that good manuring of gooseberries affected the size and weight of the fruits rather than the actual quantity, a point well worth the consideration of the grower of dessert varieties.

Black Currants again in both series of experiments demonstrated their partiality for generous dressings of dung. These results have been more recently emphasised in experiments at East Malling, where the addition of chemical phosphates and potash has given quite negative results. At Hadlow the addition of a complete artificial dressing to dung did give an increase of crop, but this complete artificial included nitrate of soda which was omitted in the Malling experiments.

At present there is no published evidence to show that heavy manuring of black currants in any way increases their susceptibility to "Big Bud" or "Reversion," and in view of the fact that most plantations are likely at the present time sooner or later to fall victims to either or both these troubles, a generous policy of manuring and a quick cropping would seem advisable.

The results at Hadlow pointed out the extravagance of 25 tons of dung per acre under their conditions, the Malling results point to the benefit of 18 tons as against 12 under different ones. The eye of the grower must always be kept open for the point when the "Law of Diminishing Returns" will come into operation.

The general practice of manuring the black currant has not differed much from the treatment of the gooseberry, though dressings of meat meal have always been popular. In some instances, too, growers are convinced that they find benefits resulting from a spring dressing of nitrate of soda.

*Red Currants.*—Red Currants do not seem to respond to heavy dressings of dung. At Hadlow they thrived as well on a complete artificial manure as they did on dung. Under different conditions at Woburn the dung showed better results than artificial alone, but artificials added to dung showed some improvement. Since the primary object is not the encouragement of new wood growth, it is reasonable to conclude that, provided sufficient humus is retained in the soil, the necessary plant food can therefore be supplied by dressings of chemical fertilisers from time to time.

*Organic Manures Valuable to the Fruit Grower.*—The results in general, both of systematic experiment and of commercial practice, clearly point to the particular value of organic manures to the fruit grower. His problem to-day is to procure sufficient quantities of good dung at reasonable rates. He has therefore turned, with considerable evidence of success, largely to the use of such waste products as shoddy, cloth bits, fur waste, rabbit flick and feathers where he requires bulk and nitrogen which is not too quickly available. He resorts to applications of fish or meat meal, castor meal, dried blood or rape dust where he judges that he requires less bulk and a more ready availability.<sup>40, 43</sup> Some of these latter manures also contain a considerable percentage of phosphates.

The time has not yet come when reliable data can be presented as to the actual comparative value of these various manures for each particular fruit under given conditions as against dung. It is as yet impossible to draw the line accurately between an extravagant dressing and a remunerative limit—a line which to some extent must largely be fixed by local considerations.

Though these "substitutes for dung" appear expensive to buy, their true value can only be judged by a scrutiny of the actual analysis of their contents. Side by side with this it must be remembered that a great deal of saving is effected in handling. The bulky organic substances are usually used at the rate of from 25 cwt. to 2 tons, and with the less bulky meals it is a matter of hundredweights to the acre.

9. THE DISEASES AND PESTS OF FRUIT TREES AND BUSHES.—  
PRACTICAL METHODS OF PREVENTION AND CURE.

The scope<sup>4</sup> of this article would not allow of dealing exhaustively with the life histories of the principal diseases and pests of fruit and their appropriate cures, even if the writer were competent to do so. The work of describing the details for controlling the ills to which fruit trees are subject is most safely left in the hands of the entomologists, mycologists and chemists who must necessarily collaborate in order to attack the particular trouble at the most vulnerable point, at the most critical moment and in the most complete manner.<sup>44, 72, 73, 76</sup> Perhaps fruit research has developed most rapidly and for a longer period along these channels, yet even to-day there is a disappointing lack of common knowledge amongst growers of the results obtained, and often something of a sceptical acceptance of the remedies suggested. This is partly due, I think, to the lack of appreciation on the part of the practical man of the real value of the life history of a disease. He is apt half-jokingly to upbraid science for telling him all about what the insect or fungus does, without suggesting some showy and immediate cure. It is irritating to be told merely to cut out and burn all infected parts, especially when one has been hoping for some newly invented spray that will prove a panacea. But if the grower would only trouble to listen a little more to what the life history revealed, he might realise that in the end it would have been more practical and more saving of money to handpick or cut out and burn than to waste thousands of gallons on experimental washing which may be partially and perhaps utterly ineffective.

On the other hand, science has not yet in every case yielded up to us completely many a life cycle. It must be confessed that ever and anon even our common pests and diseases are giving us surprises, and that here and there remain horrible gaps of uncertainty filled in only by surmise or even inherited tradition. Not so long ago the true Apple Canker was looked on purely as a wound parasite. Careful research<sup>57, 58</sup> is telling us a great deal more about canker infection to-day. Or again, we are learning that the Apple Blossom Weevil begins to think of "hibernating" about midsummer.<sup>63</sup> Time was when we carefully tipped our gooseberry bushes of "the winter stage" of the mildew long after many or even most of the resting spores had already dropped upon the ground and were waiting to re-infect the bush next spring.<sup>53</sup> The completed study of life histories, as has been proved in these and many similar cases, is the only possible basis upon which to build up successful treatments.

The grower can only apply the recommended treatments

successfully if he has mastered the outlines himself. Treatments cannot be successfully administered by rule of thumb. If the grower realises, for instance, that the appearance of the "winter stage," better called "resting stage," of Gooseberry Mildew will vary from year to year according to seasonal conditions, or if he realises that spells of wet weather may bring forth the fructifications of a particular fungus and will be the prelude to a vulnerable period or a time of likely infection, he will regulate his activities accordingly.

Considerable stress has been laid on this point because perfectly adequate and practical treatments are only too often thrown aside and discredited because the preliminary essentials which take into account the life cycle of the particular trouble have been completely disregarded.

The means for dealing with the pests and diseases of fruit trees may for convenience sake be discussed under three headings:—

- (a) Preventive Methods.
- (b) Mechanical Methods.
- (c) Spraying Methods.

(a) *Preventive Methods.*

Throughout this article hints have been thrown out as to what is implied under this heading, but it will be well briefly to accentuate these very vital points.

(i) At the outset too great care cannot be taken in the selection of young trees and bushes. As far as the grower's outside purchases are concerned, he is now assisted by the "Diseased Plants Order," but it is only too often in the grower's own nursery that Woolly Aphis or Mussel Scale, Gooseberry Mildew or Big Bud are introduced, and from thence the infection is carried direct into the plantation. It is impossible to exaggerate the value of careful scrutiny and selection.

(ii) The choice of varieties of fruit known to be robust and more or less resistant to feared diseases is the second step towards success. If varieties known to be susceptible are chosen, they should never be forgotten until they have become so obviously diseased as to be almost past recall. They should be looked over annually and sprayed as a preventive with the appropriate wash at the very first symptoms. It is in these early stages that the cutting out and burning of such things as spurs and tips infected with Brown Rot<sup>59-61</sup> are a practical possibility. But how many growers regard it as sheer nonsense if the first few "mummied" fruits, left hanging on the tree into the coming spring, are pointed out to them as the beginnings of trouble. It is now also well known that particular varieties of most fruits stand spraying better than other varieties, which are

liable to spray damage, scorching and even leaf fall. For instance, no one to-day would contemplate planting commercially the "Yellow Rough" gooseberry, fine dessert variety though it may be. Should it ever be attacked by mildew, it will stand no sulphur spraying.<sup>54</sup>

(iii) All that is comprised in the routine operations of the plantations should be done with care. One would imagine, from the careless cultivations by horse or tractor, from the rough and ready methods of pruning and sawing away of lower branches, and from the damage done by nailed boots and ladders during picking, that the possibility of wound parasites had never been heard of. When the "die back" of the gooseberry and currant, and apple canker or woolly aphid were the main troubles, carelessness was disastrous enough. To-day when the Silver Leaf epidemic is at its height matters are even worse.

Moreover, routine operations should not only prevent damage, they should as a matter of course include the immediate removal and destruction of all dead, dying and infected wood likely to spread trouble. "Plant hygiene and sanitation"<sup>46</sup> may in a few years accomplish what no heroic sprayings or sensational inventions may ever do.

We are all apt to say in reply that the trouble is with our neighbour. We forget we also are neighbours ourselves!

Finally it should be taken as a matter of course in the routine of the plantation that from time to time trees will require cleaning from moss, lichen and rough bark. The fewer resting-places we offer to our pests the better.<sup>66</sup> This also affords an argument for clean cultivation.

#### *(b) Mechanical Methods.*

Mechanical methods would appear to apply at the present time almost entirely to the prevention of damage by rabbits and hares, birds and insects. Enough has been said about rabbits, hares and grazing stock—sheep will strip a tree of its bark and on occasion even large pigs will girdle a stout trunk—but the damage done by birds is often not fully realised by inexperienced growers. Not only do many birds attack and spoil fruit—even apples and pears—wholesale, but they will go for the buds of plums and damsons as well as soft fruits. The grower soon becomes observant as to who are his friends and who his enemies, and he will then develop where necessary something of the instinct of a trapper.

With regard to insect pests, not so many years ago our ancestors had to rely almost entirely upon methods of trapping, and to-day a complete study of life histories has shown that several of our worst pests are best controlled, at any rate under

certain conditions, by such apparently primitive methods. There is every indication that there may be yet further developments of mechanical methods.

*Grease Banding.*—Grease banding is the most generally accepted method. It has now become almost a matter of routine with up-to-date growers of standard and half-standard trees which are not so effectively or conveniently sprayed as bush trees. Yet there are many people to-day who question the utility of grease bands upon standard trees. Now grease banding is intended primarily for the purpose of trapping the wingless females of the Winter and March moths as they crawl up the trunks of the trees. If there are no moths to crawl up, the banding cannot be blamed. If the bands are put on after most of the Winter moths have crawled up or if they become dried up or coated over with dead leaves before the March moth starts on her journey, banding as a method of control cannot be called in fault. If the band of grease is incomplete, not sufficiently wide, and not kept sticky, of course the results will be disappointing. If the moths are given a chance to crawl under the grease paper, they will be equally so. It would be no exaggeration to say that I have personally seen dozens of cases in which one and often nearly all these mistakes have been made. In actual fact the bands want to be on early in October and kept efficient until the end of March to ensure success. If the grower knows the insects he is out to trap, the times and seasons of their coming and going, he will not be disappointed.

Comparatively recently the value of grease bands against "Woolly Aphis" has been pointed out.<sup>70</sup> Here again success depends upon a knowledge of the upward and downward migrations of the insect.

Other forms of trapping, such as the use of hay bands to afford shelter for the pupating Codlin Moth caterpillars, need serious consideration, especially where standard trees are concerned.

Again, there seems a probability that a trouble that has developed seriously in recent years, the Apple Blossom Weevil, may at least be controlled by trapping in early summer under sacking bands. This practice has for some time past been found successful in Germany.

The main principle of many of these mechanical methods seems to be to offer the insect an attractive hibernating, resting or pupating place—but one readily removable and easily capable of destruction.

Whilst considering the destruction of insects by trapping, two other possibilities capable of development are worth noticing. Many of the pests of fruit spend part of their life cycle upon other "host" plants, often weeds, capable of eradication.

Unfortunately, in many cases the alternative hosts are not yet known, and in other cases, such as that of the Woolly Aphis and the Elm,<sup>70</sup> it would be a large order to eradicate the latter. However, such knowledge may be a guide in avoiding local centres of infection.

Finally there is the possibility of ultimately destroying some of the fruit grower's pests through the systematic multiplication of beneficent insects which are parasitic upon the harmful ones. Successful results have already been obtained in particular instances.

(c) *Spraying Methods.*

In order to be successful all the knowledge of the grower and all the intelligence of the operators should be brought into play during spraying operations. Though a great deal of spraying is well done, a very great deal more is badly done, and not only is it sheer waste of time and money, but it brings good remedies into disrepute.

This is partly the fault of those people, who exist in all industries, and who claim to provide the panacea for all ills. There is no such panacea, nor is there likely to be. Diseases and pests are so diverse in their nature and methods of attack that even if a universal chemical or compound could be found to satisfy all insecticidal and fungicidal requirements it would prove unsatisfactory. One pest requires the application of the spray as a thin film over the leaf, another needs direct force and actual hitting involving almost a drench. The different times and seasons of attack, the different positions of the enemy, render the quest for a panacea futile.

To get good results the grower must first consider what he is actually spraying for, then when is the best time to spray for that purpose, and finally what is the most suitable method of application. It is here that a knowledge of life histories is again invaluable to him.

*Best Time.*—There is always a best moment to attack the enemy; if that moment is lost it is sometimes better not to attack it at all. It may be said that this is a scale of perfection unattainable to the grower with a big acreage. He cannot get over all the ground in time. But it is not always that this will be necessary, probably only in cases of wholesale caterpillar or Aphis epidemics. One spraying at the right time is not only more effective as a killing or preventive agent, but it is more economical. It will save several partially futile later attempts. Many people, for instance, only begin to think of spraying for Aphis when their attention is drawn to the curled leaves, or for Black Scab when they see the small spots on the fruit! They are then disappointed with the results and call spraying

expensive. If only the first mother aphides had been watched for and killed, less wash would have been used and no leaves would have been curled. If only the Black Spot had been checked in its first onslaught on the young leaves, the fruits would never have become cracked and scabbed.

Perhaps the most valuable sprayings of the year are the first early ones, either with nicotine or soft soap against the mother aphides and young caterpillar, or with Bordeaux Mixture or lime sulphur against Black Spot, just before the blossom trusses open. Later sprayings may be necessary where diseases have got hold or pests are epidemic, but this early spraying has a great effect.

With little difficulty the grower can well draw up for himself a rudimentary spraying calendar,<sup>45-75</sup> reminding him when to be on the look-out for the first aphides, the first caterpillar, the scab sprayings<sup>51</sup> upon the susceptible varieties before the blossom opens, possibly again after the fruit is set, and if the disease be very persistent three weeks later—and so forth.

*Best Method of Application.*—There is always a best method of application. The mere adjustment of a nozzle from fine to coarse or from upward to downward may make all the difference. People have been seen to waste gallons of fluid in spraying the upper surface of the leaves of their gooseberry bushes, under the impression that it was a protection against mildew, and forgetting to spray from underneath, up through the bush to cover the under surfaces where the disease first germinates. Arsenate of lead applied in a drench is not only wasteful, it may be actively harmful. A nicotine wash applied without plenty of pressure will be so much less effective.

The general use of soft water, the addition whenever possible of soft soap as a spreading agent, and wherever it is impossible, owing to lime, of such a "spreader" as Saponin, may just double the effectiveness of a wash. Again, certain sprays require continual "agitation"; others "combine" well and so become more effective. There is now no difficulty in obtaining accurate information upon these details, and the choice of appropriate washes.

*Spray Damage.*—Uninformed spraying may not only be useless, it may be actively harmful. Lists of varieties of fruits liable to spray damage have from time to time been drawn up and published. Some suffer from arsenate of lead scorching, some cannot stand Bordeaux Mixture<sup>62</sup> but are not damaged by lime sulphur. Some can only stand lime sulphur at half strength and so forth. It seems quite evident that leaves in the young stage are much more resistant to spray damage than after they become torn and punctured. This fact is not always realised, and people are deterred from spraying at the right

time for fear of damaging the young leaves. It is far more often the belated spraying that causes scorching, leaf fall and even shrivelling or russetting of fruit.

Appreciation of these facts may not only prevent damage to the trees, it may even prevent disfigurement of fruit. If, for instance, a plantation of gooseberries is badly infected with a late attack of mildew it is possible to go on spraying right up to the time of picking the ripe berries, without injury to the consumer or discolouration of the fruit, by using a wash such as ammonium polysulphide, which leaves no mark.

*Classes of Sprays.*—It is of course impossible to put every treatment recommended into a particular group, but if the young grower gets in his mind a rough outline of the types of spray he will have to deal with and their general methods of working, it will clarify the situation.

(a) There are the insect-killing washes. They can be grouped fairly readily according to the type of insect that is being dealt with.

There are the insects that actually eat away the surface or substance of leaf, shoot or fruit, such as most caterpillars, leaf-eating weevils, etc. The general method of attack here is to coat the parts liable to be eaten with a thin film of poison. The wash therefore wants applying in a fine misty spray which gives as complete a covering as possible. Some form of arsenate of lead is almost universally used for this purpose, though nicotine kills very effectively most quite young caterpillars.

There are vegetable poisons, besides nicotine, less liable to cause scorching, such as pyrethrum, but they are not always readily obtainable. This class of washes acts as a direct poison.

Then there are the various forms of plant lice, such as the aphides<sup>69</sup> ("Green Fly"), capsids,<sup>67-68</sup> etc. These merely puncture the surface of the leaf, shoot or fruit, and suck their nourishment from the interior. They are therefore not amenable to direct poison. Therefore the principle of using washes that kill by contact or choking is resorted to. By far the most deadly and quick acting are the washes containing nicotine and soft soap. They are expensive, but their certainty justifies the outlay.

These contact sprays must hit their object and therefore require a coarser nozzle and more force behind them than the former class. Paraffin washes are an effective substitute, but they need very careful preparation and application or serious damage will result, hence they are not very widely used.

The class of mites, including Red Spider and the Black Currant Gall Mite, the cause of "Big Bud," are considered to be especially averse to washes containing sulphur, various forms of which, such as liver of sulphur, flowers of sulphur, and

lime sulphur, have been recommended for trial as controls from time to time. At the present time a late lime sulphur washing, at winter strength, applied to black currant bushes at the time they are showing their young leaves, is being suggested<sup>64</sup> as a possible assistance in the control of the Gall Mite.

Some insects might be best attacked in the soil, but soil fumigation or treatment on a large scale in the plantation presents difficult problems, and the results of soil dressings give very varied experiences. Pigs, chickens and ducks are often requisitioned as substitutes!

All the washes referred to in Section A are applied as spring and summer washes during the active growing season.

(b) There are the washes designed to prevent the germination or check the growth of various fungi.

These are the washes containing copper and those containing sulphur.

Those containing copper are now most commonly used in the form of "Bordeaux Mixture," which is still largely regarded as the most effective wash for controlling the disease of Black Spot on apple and pear where it does not cause injury to the variety. If there were any one trouble that could be singled out as being the grower's worst enemy militating against the production of good quality fruit it would be Black Spot. Apart from methods of plant hygiene, in the cutting away of diseased wood, the most effective control has been found to be the early spring washings just before or just after blossoming. Nothing can beat a home-made Bordeaux Mixture properly prepared,<sup>52</sup> where it can be used without fear, but unfortunately several largely grown varieties known to be susceptible to scab are also susceptible to Bordeaux injury; such for instance are Cox's Orange Pippin, Gladstone, Duchess Favourite, Eclivinville and James Grieve. In such cases a sulphur wash has to be substituted. In either case the object is to cover the young leaves and subsequently the young fruits with a complete protective covering; and a fine misty spray that will spread well is the requirement.

That sulphur washes such as lime sulphur or ammonium polysulphide may be substituted for Bordeaux Mixture in certain circumstances as a preventive against scab has already been mentioned. The chemists have yet much to reveal to us with regard to the real action of many of the washes, not only upon the fungus but upon the sprayed plant. Close observations<sup>50</sup> tend to show that work along these lines will be more than amply repaid. The immediate effect of the wash upon a particular disease may in reality prove to be but a small part of its influence upon the subsequent health and immediate cropping of the tree.

The sulphur washes, of which lime sulphur is the most

widely used, and ammonium polysulphide is worthy of more general recognition, are almost universally used as controls for the "Mildews" such as the Powdery Mildew of the apple and the American Gooseberry Mildew. These again should be applied as a thin protective film over the parts liable to attack, and their efficacy is greatly enhanced by the use of some spreading agent. Ammonium polysulphide,<sup>45-49</sup> commonly known as the "A.P.S. Wash," leaves no mark upon the sprayed fruit, and when late spraying, especially of gooseberries, is desirable, it possesses a very special value.

Flowers of sulphur, as a dry spray, is used for the Strawberry Mildew and Hop Mould.

(c) There are the so-called "winter washes," the main purpose of which is now generally agreed to be "cleaning."

Such are the provisions of nature, that the eggs of most insects and the peritrichial or resting stages of most fungi are extremely resistant to attack. There is very considerable difference of opinion as to the amount of direct injury which winter washes can inflict upon the enemies of the Fruit Grower. In the completely dormant period, of course, washes can be safely given in a far more concentrated and caustic form—hence the expression "winter strength" as applied to sprays; and if trees are really covered in rough bark and moss this is a great advantage. With caustic soda such spots for hibernating insects can be removed. But, generally speaking, the efficacy of "winter" washes, beyond cleaning, is more often mechanical than chemical. Such certainly is the case with the plain hot lime wash, which, if properly applied, coats over and smothers at least temporarily many sources of infection. Lime sulphur is also widely used as a general cleaning winter wash. Many growers claim that it has a general "tonic effect" upon the trees.

In the past, winter washing was recommended at any time during the dormant season; now the whole tendency is to leave it as late as possible without risk of injury to the tree. These applications have been aptly called "delayed dormant" washings. If their main value is temporarily to coat over insect eggs or burn up the pustules of Brown Rot, obviously the later the process can be delayed up to the time of the opening of the blossom the more effective will it be. Of course on a large farm an early beginning has to be made somewhere, though it is very rare that a whole farm would be "winter" washed each season, or would require it. The ideal moment to apply self-heating lime wash, for instance, is just as the young leaves appear round the bloom truss and the individual buds appear distinct in the truss. Slight scorching may actually result, but at this period it appears to have no ill effects.

These washes being required to hit, to smother completely, to penetrate the crevices, must be applied in more or less of a drench under considerable pressure, and through a really coarse nozzle. They are unpleasant to apply and due precaution must be taken to protect the eyes, face and hands of the operators.

*Efficient Machinery an Essential.*—The foregoing details show only too clearly that there is no "mystery" about spraying. In so far as the wash covers or hits at the right time and in the right manner just so far is the wash more or less effective. In many cases, if it were practical to fumigate each individual tree, the more effective would be the treatment, as the less easily touched parts would also be cleansed. There is not only the need for a background of knowledge, but also for readily adjustable machinery.

Details, which are of vital importance to success, cannot be entered into here, such as adequate strainers, agitators, adjustable nozzles and easily removable parts. The question of adequate and constant pressure must be emphasised because people often shrink from incurring the necessary outlay in machinery that will give them the necessary power, and they continue ineffectively trying to protect their trees with small hand knapsacks and manuals long after the trees have outgrown their use. There is more return on an efficient spraying plant than is at first apparent. Good spraying machinery has developed very rapidly in the last ten years, and the grower can obtain most that he requires for a satisfactory application of his wet sprays.

*Dry Spraying.*—The arguments in favour of the advantages of dry spraying naturally appeal very strongly to the farmer who is anxious to minimise the haulage and consumption of water upon the farm. But the effectiveness of dry spraying must be considered in the light of our present methods of attacking diseases and pests—an effective cover and an effective contact, both of which are often required to be maintained for a considerable period. Dry spraying is still largely in an experimental stage and it may be capable of great development. It has long been found effective for the sulphuring of hops. But either substances of very quick-killing properties must be used, or else very frequent applications (as in the case of sulphuring) must be made. Otherwise such an effective or lasting covering can hardly be looked for.

#### 10. CASES FOR SPECIAL TREATMENT.

In the foregoing remarks upon the four essential operations of the fruit grower, cultivating, pruning, manuring and dealing with pests and diseases, it is inevitable that many generalisations creep in, however strenuous an effort has been made to emphasise the importance of the study of particular varietal needs.

Hence the particular requirements of certain fruits in the light of recent investigations need elaboration in one or two instances. Or again, the particular circumstances in which a grower may find himself faced on taking over old orchards, or a frosty belt, deserve a few special words of comment. Perhaps it will be best to deal with these latter points first.

*The Renovation of Old Orchards.*—The established maxim of the experimental grower, that "it is usually better to top graft than grub up," seems well worth perpetuation, especially in view of the renewed interest in fruit growing that is being taken in the West Country, the land of old orchards.

A grower comes into possession of an old plantation or orchard which, at first sight, appears to be a hopeless proposition. Perhaps many of the trees are so infected with Canker, Black Spot and Woolly Aphis that eradication from the thick entwined heads appears hopeless. Perhaps the varieties are mainly uncommercial sorts, vintage varieties, or such as are specially liable to disease. Perhaps too vigorous trees have been planted too thickly. In all such cases, where apples and pears are concerned, judicious grafting of trees which are not too old, and possess a good stem and foundation branches, is worth considering. It is surprising how quickly strong-growing scions such as Bramley's Seedling make a good head and bring early returns; and they even appear to give a new life to the old stems and branches upon which they are grafted.

Little accurate knowledge is as yet to hand as to whether a careful choice of appropriate scions for particular varieties would be advantageous.

Sometimes even the stone fruits can be similarly top worked where they are suffering from lack of vigour and no pruning, but it is probably more common practice here, and one which appears often to succeed, merely to head back the old trees to the stout main branches and to allow them to make entirely fresh heads. In such cases the protection of open wounds is advisable.

It is unnecessary to refer again in detail to the other methods which should be applied to the neglected plantation or orchards. Pigs and poultry,<sup>71, 72</sup> the restoration of cultivation or the improvement of the pasture, the digging around and mulching of backward trees, the thinning out of the branches and the spraying with caustic washes have all been referred to elsewhere.<sup>77</sup>

*Frosty Situations and Failure to Set Fruit.*—The grower who comes into a fruit holding already planted may find himself faced with such contingencies as the failure of his trees to set fruit even though they are apparently healthy and bloom well. In many cases such failure is attributable either to frost damage or else to insufficient facilities for cross fertilisation.

The former cause will be easily discoverable by examination of the blossoms themselves. Sometimes it is possible to "dodge" the late frosts by reworking the particular trees with especially late blooming varieties, such as Graham's Royal Jubilee amongst apples. It is said to be possible by very late and thick lime spraying to delay the blossoming by a short period. Sometimes the only alternative is to interplant fruits less susceptible to damage. The use of orchard heaters is not entirely unknown in this country, but they have never come into common use with an elaborate organisation of frost predictors and alarm thermometers as they have overseas. Moreover, most of the experiments here have relied on the creation of heat alone rather than on heat and dense smoke combined, which is so largely used in America to prevent too rapid thawing by causing a smoke screen. It has been demonstrated to be possible in this country to raise the temperature from 8° to 10° on an area properly supplied with heaters.<sup>78</sup> This must surely be sufficient to bring about a rapid circulation of air if only the precaution is taken early enough.

Once the varieties in a plantation are identified, the question as to whether lack of proper fertilisation is the cause of non-setting of fruit does not become so difficult of solution. Most of our commercial varieties are now known definitely to be self-fertile, self-sterile or partially so.<sup>81-84</sup>

A relative order in the seasons of blossoming of different varieties is, too, fairly well established.<sup>80</sup>

In many cases definite varieties are known to be especially suitable pollinisers for certain sorts. In other cases it is certain that the pollen of some varieties will not set fruit upon other varieties even though they are blossoming contemporaneously.

Thus, too large blocks of any particular variety, the interplanting of varieties that are not "reciprocal," the lack of pollen-bearing agents, especially bees, would all point to improper fertilisation as the cause of loss of crop. After a study of the blossoming and fertilisation tables which have now been published, it may be possible, merely by top grafting, say, one in eight of the unsatisfactory trees with a variety suitable for purposes of pollination, to bring an unprofitable plantation into normal bearing.

That there are likely to be other causes of non-cropping such as stock and manurial influences, has already been hinted at.

*The Case of Black Currant Growing.*—The grower of soft fruits has congratulated himself that he at any rate need not bother his head about the question of cross pollination. Whilst this may be true, and it certainly is true that each variety of black currant is self-fertile, this does not necessarily mean that

the agents for fertilisation, insects and especially bees, can be dispensed with. It has been shown that with most varieties of black currant, a very large proportion of the flowers are never properly fertilised unless they are entered by insects. Where insects are available in insufficient numbers or where conditions of exposure and cold do not favour their working during the blossoming season poor results are to be expected. On the other hand, varieties which may crop but poorly under normal conditions, may prove highly remunerative if grown under circumstances especially favourable to fertilisation. One should aim at shelter, warmth and the proximity of bees.

In view of the present precarious state of the black currant industry it may be worth while to add one or two remarks. Something has already been said about the necessity of selecting cuttings for propagation only from bushes known to be free from "Big Bud" and "Reversion."<sup>62</sup> A further word on this question of selection might be said. Apart from the question of disease, some data have already been presented showing the superior value of particular strains of a single variety of black currant.<sup>24-25</sup> Within the last few years, hundreds of acres of black currants have been planted from unselected material and have never yielded a single economic return. Even the good and bad varieties have become intermixed and unidentifiable to most growers. On the other hand, I have had brought to my personal notice several cases where growers are proceeding along lines of careful selection from bushes of proved cropping quality, who are making a very good thing out of black currant growing with comparatively little risk. If clean stock of a good variety is selected from bushes of known cropping quality, if they are given an advantageous situation and generous feeding, the grower's main cause for worry should then resolve itself into being on the alert for the first signs of "Big Bud" and "Reversion."

In the early stages at least "Big Bud" is controllable by a careful hand picking of the obviously affected buds. To this can be added the lime sulphur spraying<sup>64</sup> already referred to elsewhere in this paper. Any badly infected bushes should be immediately grubbed and burnt.

The causes of so-called "Reversion" are as yet unknown, though the main symptoms are becoming more generally and accurately recognised.<sup>62</sup> Until more is known about the trouble, affected bushes should be grubbed and burned immediately they are discovered, if for no other reason, for fear they should be used as sources for cuttings, as has happened frequently.

Black currants cannot be grown to-day by being left to themselves. They require careful watching and close scrutiny. Then they may yield a very handsome return.

## 11. THE HANDLING OF THE FRUIT.

In the main, the general details relating to this subject fall outside the scope of this article. The experienced fruit grower knows only too well when to pick his soft fruits and his stone fruits so that they may arrive at their destination in the best marketable condition. He knows too what a change in weather conditions may mean. From his point of view the right time to pick is when it pays best. He realises the different channels open to him for sale, from the contract with the jam manufacturer to the particular partialities of individual markets. The inexperienced grower will be advised to study these things in the markets themselves. The man from the outside may wonder why more effort has not been made in this country towards the establishment of certain special lines of selected dessert fruits presented in additionally attractive forms. After all the grower and his salesmen should know best the extent of such possibilities, though sometimes even they do not seem fully to appreciate the psychology of the consuming public. A few special quality fruits, attractively displayed in a non-returnable package, which brings them fresh with their bloom from the plantation, no matter through how many intermediate channels they pass, to the very door of the consumer, would be irresistible to many.

*Packing and Grading.*—During the past ten years, however, the fruit farmer, and especially the apple grower, has begun to act on the realisation that the public must be educated to appreciate his produce. The movement may be said to have made its initial public manifestation at Ashford, Kent, in 1912, when the first considerable display of graded and boxed English apples was shown to the public as a result of the educational campaign undertaken by the S.E.A. College, Wye.<sup>92</sup> The movement began to spread rapidly, new and remunerative channels for distribution, such as shipping, export and the wholesale grocer's trade, began to develop.

The war-time years, during which any home-produced fruit sold anyhow, gave the movement a considerable set-back, and encouraged the impression that after all the consumer was not in the least discriminating. Only the return to prices such as have been realised in a glut year like the present (1921) has been fully able to contradict such an idea. Nevertheless, immediately that facilities again offered themselves, the far-seeing growers started to build up once more a reputation for good English fruit, well handled, well packed and well graded. The revival of this sound principle, which began to make itself felt in the local Kent, Eastern Counties, and West Midland Shows, culminated this year in the great united effort at the Imperial

Fruit Show held at the Crystal Palace under the auspices of the *Daily Mail*, which worked in collaboration with the technical experts of the Ministry of Agriculture and the County Sections. This great demonstration of British fruit, grown for the most part under modern conditions, had innumerable lessons for the grower in matters of technical efficiency; for the public in displaying the best commercial varieties properly presented; and for the technical experts in the solution of problems suggested by the varying colour and quality of fruit, grown under different conditions of soil and cultivation. However, the most outstanding fact seemed to be that English growers as a body had come to agree not only upon the details of standard boxes and barrels, but upon the general utility of establishing uniform grading and packing in order to gain the greater confidence of the public.

It is unreasonable to suppose, even were it altogether desirable, that the bushel and half-bushel baskets will disappear for purely local trade, but there is every reason to believe that henceforth the best grades of the best commercial varieties of English fruit will be obtainable in guaranteed standard packages.

A definite standard has been set up by the Federation of British Growers,<sup>88</sup> the Horticultural Branch of the Ministry of Agriculture are fostering the movement<sup>86 90 91</sup> by demonstrations in the best methods of grading and packing, and prominent salesmen in the London and provincial markets are making a speciality of this trade.

One more welcome demonstration of progress was apparent at the Show in the united effort of growers in the Association exhibits entered for competition. Perhaps most striking of all was the practical acknowledgment on the part of the National Farmers' Union of the possibilities underlying centralised depots for grading and packing. The exhibit of graded and boxed fruit under the auspices of that Association may prove to be an historic landmark in the better handling of English fruit, if the lesson is not allowed to be forgotten.

The advance in methods of handling has called forth the introduction of greatly improved appliances, such as grading machines, box-presses and packing tables. Perhaps the acquisition of cheap wood for the provision of inexpensive standardised boxes and barrels would encourage developments at the present time more than anything else.

*Picking and Storing.*—If fruit, especially apples and pears, are to be presented to the public in these comparatively new forms, the essential factor is that the fruit shall be without blemish and also with keeping quality.

It is unnecessary to enlarge upon the question of blemish further since it is involved in the paragraphs upon spraying. Yet it is strange to find growers who have taken care throughout

the season to protect their fruit from Scab and *Aphis*, Codlin and Capsid, sometimes picking their fruit by piecework and allowing it to be handled as if it were coals. We have long known the toll that is taken in the store-room of apples "going black,"<sup>56</sup> and we are now in a position to realise that Brown Rot entering at the most insignificant wound is the cause of this trouble. Bruising, then, is not only unsightly, it is actively injurious.

Little fresh light has, it would appear, been thrown upon another aspect of picking, *i.e.* the premature picking or drastic thinning of fruit, and its relationship to the subsequent cropping of the tree. It has been a common belief that it was possible by this process to "help the tree" to bear with greater regularity. At Woburn<sup>58</sup> there were indications that in the early stages, if a young tree were totally "disblossomed" for a few seasons, it cropped excessively afterwards for a short period of years, and subsequently lost its superiority. But the work has been carried no further.

With regard to the storage of fruit, from time to time individual growers have experimented, not only with apples and pears but even with plums, to extend the season of distribution by methods of cold storage. The results appear to have been somewhat varied, but in cases of private enterprise the complete data are not always available. So important has the question become that it is now engaging the attention of a number of research workers under the direction of the Food Investigation Board, and it appears likely that definite developments may be available before long.

*Preservation.*—During the war experiments were conducted not only into the possibilities of drying and canning home-grown fruits, but into various other methods of the preservation and utilisation of the poorer quality products. Considerable data are therefore now to hand from which inquirers may not only learn of the methods employed, but judge somewhat of the commercial possibilities. The educational campaign of the Horticultural Division of the Food Production Department and the subsequent activities of the Women's Institutes have brought to the notice of every housewife the possible methods of preservation, the simplest and surest methods of bottling and jam-making, in a manner so thorough that these operations are the common practice in nearly every household to-day.

It is by the laying of such unobtrusive foundations that not only is the consumption of fruit largely increased, but the health and standard of living of the nation are improved by its wholesome consumption.

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<sup>73</sup> Garrad, G. H. . . . . Poultry Keeping in Fruit Plantations. *Journ. Min. of Agr.*, Vol. XXVII, No. 14, July, 1920.

<sup>74</sup> Pickering, Spencer . . . . . Science and Fruit Growing. Macmillan, 1919.

<sup>75</sup> Pickering & Theobald . . . . . Fruit Trees and their Enemies with a Spraying Calendar. Simpkin, Marshall, 1908.

<sup>76</sup> Theobald, F. V. . . . . Insect Pests of Fruit. Publ. by the Author, 1909.

## CASES FOR SPECIAL TREATMENT.

<sup>77</sup> Ministry of Agriculture. Treatment of Neglected Orchards. Leaflet 70.

<sup>78</sup> Mann, P. . . . . Losses of Fruit from Frost. *Journ. Min. of Agr.*

## POLLLINATION.

<sup>79</sup> Berry, G. P. . . . . Investigations in Cherry Orchards. *Journ. Min. of Agr.*, Vol. XXIV, p. 288.

<sup>80</sup> Bristol University . . . . . The Date of Blossoming of Apples, Pears, Plums and Small Fruits. *Ann. Rep. Ag. & Hort. Res. Stat.*, Long Ashton, 1913.

<sup>81</sup> Chittenden, F. J. . . . . Pollination in Orchards, Nos. 1, 2, 3. *Journ. R.H.S.*, Vol. XXXVII, p. 350; XXXIX, p. 366.

<sup>82</sup> Rawes, A. N. . . . . Pollination in Orchards, No. 4. *Journ. R.H.S.*, Vol. XLVI, p. 353.

<sup>83</sup> Hooper, C. H. . . . . Pollination of Fruits. *Journ. Min. of Agr.*, Vol. XXVIII, No. 2, May, 1921.

<sup>84</sup> Sutton, I. . . . . Report on Tests of Self-Sterility of Plums, Cherries and Apples at the John Innes Hort. Institution. *Journ. of Genetics*, Vol. VII, No. 4, 1918.

<sup>85</sup> Wellington, Hatton & Amos . . . . . The Running Off of Black Currants. *Journ. of Pomology*, Vol. II, No. 3.

## HANDLING THE FRUIT.

<sup>86</sup> Ministry of Agriculture. Grading and Packing of Fruit and Vegetables. Leaflet 98.

<sup>87</sup> Department of Agriculture and Technical Instruction for Ireland . . . . . Marketing of Fruit. Leaflet 57.

<sup>88</sup> Lobjot & Taylor . . . . . British Growers' Scheme for Grading and Packing Apples. *Journ. Min. of Agr.*, Vol. XXVIII, No. 5, Aug., 1921.

<sup>89</sup> Taylor, H. V. . . . . Marketing of Fruit. *Journ. Min. of Agr.*, Vol. XXVIII, No. 3, June, 1921.

<sup>90</sup> " " . . . . . Grading and Packing of Fruit. *Journ. Min. of Agr.*, Vol. XXVIII, No. 4, July, 1921.

<sup>91</sup> Turnbull, J. . . . . Packing Apples in Boxes. *Journ. Min. of Agr.*, Vol. XXVIII, No. 6, Sept., 1921.

<sup>92</sup> Smith & Wellington . . . . . The Packing of Apples in Non-returnable Wooden Boxes. S.E. Agr. College Leaflet.

No claim can be made either that this list of references is in any way exhaustive or even entirely up to date. It will, however, help the grower to lay his hand upon the types of publication that will give him the opportunity of pursuing these subjects much further.

There are many other publications which could have been referred to with advantage, but space would not allow.

I wish to acknowledge my special indebtedness to Mr. N. H. Grubb, who has given me his advice and assistance in writing this article.

R. G. H.

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### THE PLANTING, CULTIVATION, AND GENERAL MANAGEMENT OF ORCHARDS IN KENT.

AMONG the principal considerations to be taken into account in the planting of an orchard are the careful and proper selection of the ground proposed to be planted, and the suitability of the soil. Steep valleys should be avoided, if possible, for in this position trees are very liable to suffer from late frosts; the higher land should be chosen with an east, south-east, or south aspect, so that the early morning sun falls gradually on to the bloom before its heat has become intensified, whereas in a valley the sun catches the bloom more suddenly and with greater power, and if the frost is still on it, the bloom is almost certain to be scalded and thus cut off.

South-westerly gales do much injury to the young trees and fruit, and shelter on the south-west is very desirable. This can be obtained either by means of a high quick hedge, a poplar lee, or by a belt of larch.

A good supply of water is necessary both for the purposes of watering stock and for spraying the trees, and where this is not present it should be arranged for, either by the provision of wells, tanks, ponds, or by other means.

The field should be properly squared and set out, the holes for the standard trees being dug not less than 3 ft. across by 2 ft. deep. Standard trees should be of not less than 5 ft. 3 in. to 5 ft. 9 in. in height, and, if possible, should be planted by Christmas. Great care should be taken that the trees are not planted too deep, in a vast majority of cases the nearer the surface of the ground the trees are planted, the more satisfactory will be results. Four or five spits of farmyard manure, if obtainable, should be put close round the trees on the surface to retain the moisture. Beside each tree should be driven

in one or two stakes, to which the tree can be secured by means of a straw band. If only one stake is used, it should be put on the south-west side, so that if the band should break the prevailing wind will blow the tree away from the stake rather than on to it. In any event great care should be taken to see that the tree remains properly secured, as a great deal of damage may be done by the chafing of the tender young wood against the top of the stake. Good stout creosoted stakes are best. It is also advisable to put two shorter stumps round the tree (which will thus stand in the centre of a triangle or square as the case may be) to prevent sheep from rubbing, and thereby causing much damage. In the case of apples, pears and plums it is advisable to encircle the tree with a petticoat of wire-netting about 4 ft. high, of a sufficiently stout gauge to stand by itself; I have found 1 in. mesh and 17 gauge answer very well. The edges of the wire-netting should be bound together by thin wire, and the top sharp edges should be bent outwards in order to prevent them from chafing the tree. The circumference of the petticoat should be: for young trees 18 in., and for older trees up to 2 ft. 6 in.

If trees are planted on pasture, this should be grazed and on no account be cut for hay, as this practice has a very prejudicial effect on the trees. If an arable field is selected, however, bush fruit may be planted, or potatoes and green crops grown for the first few years. On no account should corn be planted between the young trees and left to ripen. I have known young orchards practically ruined in this way. When the time comes to put down grass, care must be taken to provide a proper mixture of fine grasses, the coarser varieties being excluded.

I will deal with two sorts of orchards, viz. (1) Cherry Orchards, and (2) Hard Fruit Orchards; comprising apples, pears, and plums.

#### 1. CHERRIES.

Cherries were first introduced into Kent by the Romans. Mr. Furley, in his *History of the Weald of Kent*, records that Camden, following Lambarde, describes Kent as "abounding in apples beyond measure, as also with cherries, which were brought out of Pontus into Italy 689 years after the building of Rome, and 120 years afterwards into Britain (A.D. 48)." (Pliny, *Nat. Hist.*, Book XV, Chap. 25.)

With cherries, unfortunately, as with so many other good things introduced by the Romans, deterioration was allowed to set in. They seem to have been re-introduced by the Normans, and again re-introduced in the reign of King Henry VIII, as Hasted, in his *History of Kent*, under the head of "Tenham (or Teynham)," says:—

“Richard Hayns, fruiterer to King Henry VIII, having observed that those plants, which had been brought over by our Norman ancestors, had lost their native excellence by length of time, and that we were served from foreign parts with these fruits on that account—which he saw no reason for, as neither the soil nor climate here were unequal to the bringing of them to perfection—determined to try a plantation of them here; for which purpose, having, in 1533, obtained 105 acres of rich land, then called the Brennet, and having, with great care, good choice, and no small labour and cost, brought plants from beyond the seas, he furnished this ground with them in rows, in the most beautiful order. These fruits consisted of the sweet cherry, from hence usually called the Kentish cherry, the temperate pippin, hence for the like reason called the Kentish pippin, and the golden renate.”

Curtler, in his *History of English Agriculture*, quotes Sir John Norden’s “Surveyor’s Dialogue” (printed in 1608): “Above all others I think the Kentishmen be most apt and industrious in planting orchards with pippins and cherries, especially near the Thames about Faversham and Sittingbourne.”

The chief centres in Kent for the growth of this fruit are the Sittingbourne and Faversham district on the Thanet, Woolwich and Oldhaven beds, and the Maidstone district on the rock, chiefly on the Hythe beds. Sir Charles Whitehead, in his article “Fruit-Growing in Kent,” says: “There are a few orchards near Maidstone, but they are becoming few and far between.” I do not think that this statement would be true to-day, as in recent years many cherries have been planted in this district. I know of few acts of cultivation which will more permanently improve suitable land than the judicious planting of a good cherry orchard. Cherries, however, take a long time to come into bearing. Anyone however who contemplates planting a cherry orchard, must not expect an immediate return. Under favourable conditions a moderate crop will not be obtained under 12 years, and it will be 20 years or more before a full crop is grown.

In planting cherries there are several considerations to be taken into account, but it may be accepted as an axiom that in most cases where hops are successfully grown cherries will also do well, the exception being perhaps on the Wealden clay. Cherry trees have very shallow roots, and they thrive best on a brickearth or rich mild loam, provided that there is good under drainage such as chalk, ragstone, or gravel of the Thanet and kindred beds. With regard to altitude, some of the most regular bearing orchards are but a few feet above the sea-level, but there are good orchards which are as high as 400 ft. above the sea. It is just above sea-level that the earliest cherries are picked. The

following are the dates for the last ten years when the first cherries were sent from the parish of Tonge, near Sittingbourne, to the London markets: 1912, May 30; 1913, June 9; 1914, June 5; 1915, June 16; 1916, June 5; 1917, June 14; 1918, June 27; 1919, June 13; 1920, May 31; and 1921, May 30. At the end of the season, some growers like to have cherries to sell in the Canterbury Cricket Week (the first week in August), but both these sets of dates, however, must be taken as extreme.

With regard to the best way of planting, Mr. John Boys, in his *Survey of Kent* (1796), states: "The best method known here for raising orchards of apples and cherries, is to plant them among hops, by which they very soon come to perfection: the constant culture of the land for the hops, with the warmth and shelter they afford the young trees, causes them to grow with great luxuriance," but a critic under the *nom de plume* of "A Middle Kent Farmer" says: "This is erroneous. It is a bad practice; for cherries do best when early laid down to pasture."

There is no doubt that a good many orchards have been started in hops, but there is a very grave risk of the cultivations damaging the trees, to say nothing of the damage caused by the chafing of the hop wire. When fruit trees are left for even a few years in hops, they receive an inevitable check when the hops are grubbed, and I am inclined to agree with the opinion of "A Middle Kent Farmer."

The best method of planting cherries (in my opinion) is to plant them alone, without any other varieties of fruit. In many cases it has been the custom to put in "fillers" of plums, but the serious attacks of infectious diseases such as "Brown Rot" and "Silver Leaf," to which this fruit is peculiarly liable, have rendered this practice of doubtful utility.

It is not necessary to put wire petticoats round cherry trees, as it is seldom that the stems are eaten by stock; staking, as before described, is, however, necessary. The equilateral triangle system of planting is, I think, the best. One must be guided by the nature of the soil and the varieties decided upon, as to how far apart to plant the trees, but I have found from experience that 32 ft. from tree to tree (which gives about 50 trees per acre) to be a good distance. On some soils, however, even this distance will be found to be too close a plant for strong growing varieties such as "Early Rivers," but the difficulty can be got over by planting every alternate row with trees of a less vigorous variety, such as "Black Circassians," "Governor Woods," or "Frogmores." A great thing to be borne in mind when planting cherry orchards is to have the varieties to follow on so that the gang of pickers may be kept in full employment from start to finish. The various varieties should be planted in the order in which they will ripen, and

should not be dotted about indiscriminately. This will facilitate bird-minding and the shifting of ladders. Another point that should be considered is that it costs as much to keep the birds off an orchard of three acres as it does off one ten times its size.

Unlike apples, pears and plums, cherries are generally top-grafted (the best stock for grafting is the wild cherry, or gaskain, which is found growing wild in the woods). The grafting may be done either in the Nursery or in the permanent quarters, after the wild gaskain has had time to become established. Unless, however, the would-be planter has access to woodlands containing gaskains, and is able to employ a thoroughly good graftor, who can also take care of the scions for the first year and treat them for the insect pests to which they are liable, he will be well advised to adopt the former method.

Cherry trees often grow to very large sizes, as much as a sixty-five stave ladder being sometimes necessary for gathering the fruit, and the largest crop I know for a single tree is one ton. In cases where the trees have been planted too thickly and forced to grow straight up, the lower branches are killed, and it has been found that pollarding is then beneficial, and where the trees are not too old, and are not bearing well, regrafting with a vigorous growing sort such as "Early Rivers," "Napoleons," and "Windsor" is often very profitable.

Cherries differ from hard fruit in that they bloom profusely every year. A cherry orchard in full bloom is a thing of great beauty and joy, and one does not wonder that such an artistic nation as the Japanese pay the blossoming tree peculiar homage.

Cherries should never be pruned after they have been planted three or four years, but should be left to grow naturally, with the exception that diseased and crossing wood should be cut out, and any limbs that attempt to "bolt" should be headed. A good deal of harm has been done in the past by the injudicious pruning of cherries. A peculiarity of this fruit is that when a tree has reached maturity small branches die off year after year, and to keep a tree in good health it is necessary that the dead wood be cut out, directly after the blooming time and also in the autumn before the leaves fall.

#### *Diseases.*

"Cherry Leaf Scorch" is a serious disease, in the main attacking Orchards on the poorer soils. The attacks on the trees are easily recognised in the winter, as the leaves remain on the branches, and they are still to be seen after the flowering. It is a fungoid disease, and, where not too big a job, the dead leaves should be picked off and burnt, but where this cannot be done a spraying of Bordeaux Mixture immediately before and after the blooming is recommended.

Cherries are liable to "Bull wood" or "Cherry Witches' Brooms," which also is a fungoid growth. This should be cut out at the blooming period, as the leaves on the affected parts, at that time, have a curious red colour, which later on disappears, and the diseased wood is then often hard to detect. This cutting out should be done thoroughly, otherwise considerable damage will be done to the orchard, as this growth when fully established in the tree seems to draw the strength and the nutriment in the same way that a cancerous growth does in an animal. A remarkable thing about this disease is that while it is prevalent in the wild gaskain and in most of the cultivated varieties it is seldom if ever found in the "Amber" or "Bigarreau." The late Mr. George Webb, who wrote the paper "Fruit Cultivation" for the Institution of Surveyors in 1875, told me from his observations extending over fifty years that he had never seen it in this variety, and I can personally endorse this statement.

"Brown Rot" is much more prevalent than most growers realise and its ravages are often put down to frost. The "Flemish" and the "English" varieties are particularly susceptible to this disease. The "Brown Rot" diseases, of which there are many kinds, have been studied at Wye College by Professor E. S. Salmon and Dr. Wormald.

The former gentleman writes me as follows:—

"The 'Blossom-wilt and Canker' disease of the apple (particularly in Lord Derby), which is caused by one of 'Brown Rot' fungi, has been found to be controllable by the knife—when used in time. The 'Brown Rot' of the plum may be kept in check by the removal from the tree of the 'mummied' plums, which otherwise remain on from season to season. The 'Brown Rot' of the cherry is far more difficult of control, and no absolute cure has yet been found. The best results so far have been from the use of Bordeaux Mixture, or a strong caustic wash, or ammonium polysulphide used just previous to the blossoming period. Experiments are now being carried out at Wye College to see whether 'Flowers of Sulphur' applied just before or even during the blossoming period will hold the disease in check." Wet weather seems to encourage the spread of this disease.

I am sorry to say that "Silver Leaf" disease in many orchards has completely wiped out the "Victoria" plums, and has during the last few years made serious attacks upon the cherries. Trees that have been re-grafted or pollarded, that is to say, where serious amputations have been made, are peculiarly liable to this disease. It is recommended that the saws used be disinfected between each cutting, and that the stumps be dressed with hot pitch to prevent infection, in the same way that the old time surgeons used to treat their unfortunate patients before the days of antiseptic surgery. It may be that the last two

seasons have been peculiarly favourable to the spread of this disease, but I must confess that I regard it as a serious menace. It is much to be desired that our scientists, who have for some time past been working in this direction, should find a radical cure. "Napoleons" and "Turkey Hearts" are the varieties most liable to attack.

There is also "Gumming," which affects some sorts of cherries, particularly "The Old Black Heart" more than others, and it is generally taken to indicate an unhealthy state of the tree. As far as I am aware no complete cure for this trouble exists. In Mr. John Boys's *Survey of Kent* in the Appendix, however, it is written: "and the medication will, in great measure, stop the oozing of gum in the several species of cherries and other stone fruits." I have so far been unable to discover the composition of this "medication."

Another pest is "Winter Moth," to be guarded against by grease banding (to catch the wingless female); when, however, caterpillars are found in the spring they may easily be destroyed by a spraying of arsenate of lead.

The chief bird enemies are sparrows (which peck off the bloom), and later the blackbirds, thrushes, rooks and jays do a certain amount of damage, but about half-way through the season starlings generally come up from the marshes in battalions and do damage in a wholesale manner. Bullfinches also do a lot of harm to fruit buds in the winter, but more so to plums than to cherries. Thoughtless bird-minding is sometimes a menace to rare birds. I once saw eight or ten hawfinches, that had been wantonly shot by a careless boy, hanging up in a cherry tree. The indiscriminate firing of shot into trees is a practice to be much condemned.

Of all the orchard fruits, none is more dependable on the weather than the cherry. Cherries should not be picked when they are wet; the rain and wind cause them to split and rot.

During the War an industry sprang up in this neighbourhood which took the surplus fruit off the market. White cherries such as "Bigarreaus" and "Frogmores" were bleached and preserved, ultimately to be made into glacé fruit, and it is much to be hoped that this industry will survive and grow.

Cherries are generally picked by women formed into gangs of five to eight (according to the crop and the size of the trees), with a man to move the ladders and to pack the fruit. Sometimes, in heavy cropping years, men are employed to pick and are paid at so much per half-sieve, but this is not to be recommended except in case of necessity, as there is a danger of excessive "brutting." Cherries are sent to market in half-sieves containing 24 lb. of fruit. It is possible, owing to the facilities offered by the Railway Companies to eat cherries

in Glasgow within 24 hours of their being picked in Kent.

I append, in the order of ripening, a list of cherries which are profitable and good croppers:—

1. Bigarreau de Shreken.
2. Early Rivers.
3. Governor Wood.
4. Black Circassian or Knight's Black.
5. Frogmore Bigarreau.
6. Cleveland Bigarreau or Webb's Early Amber.
7. Old Black Heart.
8. Nutberry Black.
9. Victoria Black.
10. Roundell Black.
11. Waterloo.
12. Black Eagle.
13. Amber or Bigarreau.
14. Napoleon Bigarreau.
15. Malling Black Eagle.
16. Turkey Heart.
17. Emperor Francis Bigarreau.
18. Noble.
19. Florence.
20. Windsor.

#### COOKING VARIETIES.

English Red (Kentish Red).

Flemish Red.

#### 2. HARD FRUIT.

Apples will grow on almost any soil, even on the stiffest clays, if drained, but the grass grows more "rankly" under apple trees, and the sheep as a consequence do not feed so closely.

The apple orchards in the Weald of Kent have increased to a very large extent.

In passing, it is interesting to note that cider-making in this county is now almost a lost art. A century and a half ago, however, it was evidently a flourishing business, for Mr. John Boys, in his *Survey of Kent*, refers a good deal to the growing of apples for cider-making, and states that "Mr. Stone, of Maidstone, is a cyder-maker of great repute, and in a very extensive line of business." This industry is evidently about to be revived, for a well-known Maidstone firm of brewers has started cider-making in an adjoining town.

I think the best method of planting a hard fruit orchard is to set out the field in main rows, on the square, 40 ft. apart. Varieties of apples such as "Bramley's Seedling," "Blenheim Orange" and "Newton Wonder" on suitable soil, make very large heads and ultimately require a lot of room. The main rows to be planted with free-growing varieties, with intermediate rows of smaller-growing varieties, such as "Lane's Prince

Albert," "Worcester Pearmain," "Yellow Ingesterie," etc., and the various sorts of pears, the "fillers" to be plums such as "Victoria," "Czar," "Rivers' Early Prolific," "Belle de Louvain," etc. This method of planting gives main sorts 27 trees, Intermediates 27 trees, and "Fillers" 54 trees, or 108 trees in all per acre. The trees can be cut for the first three or four years after planting, but afterwards the knife should be used very sparingly.

There is still much to be learned about the fertilisation of bloom, but it is recommended that when varieties such as "Cox's Orange Pippin," which are self-sterile, are grown, wild "crabs" be planted in the shelter belt to aid in fertilisation.

The plums will first come into bearing and they should be the first to be taken out; it will depend on the growth made as to what extent thinning will eventually have to be resorted to. When the twigs of the adjoining trees begin to touch, cutting back should be resorted to. The main row trees, provided they are doing well, should on no account be touched, the whole of the cutting back being done to the other rows. Many orchards are partially ruined by pruners cutting up both sets of rows.

One of the chief drawbacks to many hard fruit orchards of fifteen years old and upwards, is that they contain too many non-marketable varieties. Where this is the case, or where a particular variety is degenerating, I recommend ruthless cutting off and re-grafting with better varieties, if the trees are not too old. A somewhat remarkable instance of the benefit of re-grafting has come under my notice. In 1897 a well-known Kent valuer and I had occasion to value some fruit-land in this district, which was planted wholly with "Lord Suffield" apples; the returns shown us were very heavy, and we fixed the value at a large price per acre. Shortly afterwards this variety began to deteriorate, and the owners (who were people of exceptional foresight) cut off and re-grafted all the trees with other market varieties. I had occasion to value the same piece of fruit-land within the last few years, and in my opinion it had actually improved and was more valuable than was the case twenty years previously.

It should be borne in mind that plums show the least satisfactory result of re-grafting. We are greatly lacking in exact knowledge of the science of re-grafting (or double-grafting), the possibilities of which I believe to be very great, and it is much to be hoped that some of our scientists will be able to help us in this matter in the near future.

I think on the whole that hard fruit grown in an orchard is less liable to disease than that grown in a plantation, and that as a rule the fruit keeps better; on the other hand, the fruit is not so large, neither is the crop so heavy while the trees are young.

Among the chief diseases are "Silver Leaf," "Brown Rot,"

“Apple Blossom Weevil,” “Apple Aphis,” “Apple Sucker,” “Pear Midge,” “Winter Moth,” and the “Lackey Moth” (or “Ring Moth”—so called because the female lays the eggs round the young shoots of the tree in rings). With the exception of “Silver Leaf,” these pests and diseases are all, more or less, kept under control by various sprays, and leaflets dealing with these are issued by the Ministry of Agriculture. With regard to the “Lackey Moth,” it seems that something in the salt air favours this pest, as I have noticed this plague to be much more serious in orchards not far from the Estuary of the River Medway than on higher ground. In 1919 a most terrible attack occurred in the orchards adjoining the Swale and the Medway, the famous Callum Hills orchards being particularly affected. In spite of continual spraying and of the efforts of the cuckoos (for there were several of these birds observed), the caterpillars overran every tree. The whole of the leaves were stripped and nothing left but the skeleton trees, which were a seething mass of hairy caterpillars. At last in desperation a gang of one hundred German prisoners of war were hired from the military authorities to smash the caterpillars with sacks tied on to the end of long poles and sticks. In the year following there were hardly any web nests or caterpillars to be seen.

I append lists of varieties of the various sorts of apples, pears, and plums suitable and profitable for orchard cultivation.

#### DESSERT APPLES.

##### *Free Growers.*

Devonshire Quarrendon.	Rival.
Hunt's Early.	Blenheim Orange.
Lady Sudeley.	King's Acer Pippin.

##### *Intermediates.*

Gladstone.	Charles Ross.
Beauty of Bath.	Allington Pippin.
James Grieve.	Cox's Orange Pippin.
Worcester Pearmain.	Fearn's Pippin.
Ellison's Orange.	Court Pendu Plat.
Yellow Ingeshire.	

#### CULINARY APPLES.

##### *Free Growers.*

Norfolk Beauty.	Newton Wonder.
Annie Elizabeth.	Warner's King.
Bramley's Seedling.	Smart's Prince Arthur.
Encore.	Bismarck.
Lord Derby.	

##### *Intermediates.*

Lane's Prince Albert.	Early Victoria.
Early Julian.	

## PEARS.

Jargonelle.	Clapp's Favourite.
Chalk.	Fondant de Thirriot.
White Lammas.	Conference.
Red Lammas.	Dr. Jules Guyot.
Reine de Poire.	Emile D'Heyst.
Caillot Rosat.	Eye Wood.
Fertility.	Brown Catherine.
Hessel.	Green Winter Windsor.
Beurré Hardy.	Beurré Rose.
Williams' Bon Chrétien.	

## PLUMS.

Rivers' Early Prolific.	Victoria.
Czar.	Belle de Louvain.
Early Orleans.	Heron.
Oullin's Golden Gage.	Ponds' Seedling.
Diamond.	Bush.
Late Orleans.	Monarch.
Greengage.	Giant Prune.

## DAMSONS.

Bradley's King.	Merryweather.
Farleigh (Cluster or Crittenden's).	

## THE MANURING AND GENERAL TREATMENT OF THE BOTTOM.

The following paragraph is taken from the article on "Fruit-Growing in Kent," written by the late Sir Charles Whitehead, which appeared in the Society's Journal of 1877.

"It was formerly the prevalent notion, still holding to some extent, that fruit trees require but little manure. Apple and cherry orchard-lands were mown or fed off with lean sheep year after year, with the result that the trees only bore a crop once in two years, and the fruit grew smaller by degrees and beautifully less. The owners of the celebrated cherry orchards in East Kent have found out the folly of starving the trees. For the last few years they have manured the land liberally with manure brought from the London stables and cow-sheds, which has largely increased the quantity and improved the quality of the fruit. Sheep fed with corn and cake feed off the grass, and it is now quite the exception to mow orchard-land."

If the owners of the celebrated Kentish orchards had been willing and able to continue this practice, their returns to-day, in many cases, would be much greater than they are.

With regard to manuring, it may be taken as a generally accepted fact (in spite of certain statements, founded on experiments, to the contrary) that the better an orchard is "done," other things being equal, the better are the results obtained.

I am afraid that many fruit-growers, even in these more enlightened times, seem to think that provided they keep the grass fairly well grazed with ewes and lambs, without concen-

trated food, they have done all that is necessary, quite forgetting that this treatment on ordinary pasture barely serves to keep up the fertility, and is therefore inadequate where a crop of fruit has to be produced in addition.

Manuring may be carried out in three different ways:—

1. Farmyard or London Manure.
2. Artificial Manure.
3. By the feeding of Concentrated foods to Live Stock.

1. The application of Farmyard or London manure, although thoroughly effective, is now an expensive process; in fact, it is almost impossible so to treat large acreages except under very favourable circumstances. The replacement of horse power by motor power has had the inevitable result, on the one hand, of lowering both the quality and the quantity of London dung, and on the other hand, of greatly increasing the price of the lessened supply. Where it can be easily obtained, or farmyard manure can be spared from the farm, a dressing of 15 to 25 loads per acre is of great advantage. Except in the case of trees just planted, it is best not to put the manure too close to the trunks of the trees.

2. Artificials.—Any manure that tends to improve the grass, provided the orchards are fed properly afterwards, is good. For land that is deficient in phosphates, bone manure in any of its various forms is an excellent manure, and most orchards are the better for an occasional dose of potash. Fish guano, nitrate of soda, sulphate of ammonia are also useful manures where ammonia is required. Although strictly not a manure, the application of lime, where this can be obtained at a reasonable price, is advisable. It sweetens the grass, corrects any acidity there may be, and is altogether a practice to be recommended.

3. The feeding of stock presents the easiest and the most efficacious manner of manuring orchards, and it falls under four headings, viz:—(a) Sheep. (b) Pigs. (c) Poultry. (d) Cattle.

(a) I suppose the ideal way of feeding by sheep is to lay the orchards absolutely empty from the autumn (say November 1) until the early spring (say the middle of February), and then to stock heavily with tegs or two-year-olds, the sheep being fed with mangel, corn, and cake. The advantages of this method are, that the grass can be much more closely fed down than where a breeding flock is kept, much more manurial value is left by a dry flock than by a wet one, and that the grass being laid empty in the winter can be stocked early in the spring, so that advantage can be taken of the first sales of tegs. The disadvantages are that on occasions sheep are worth less when they come to be sold in the autumn than the cost price in the spring.

This was noticeably the case last season, and the grazing of orchard sheep entailed a very heavy loss, whereas in the two previous years they had shown a profit. I think the grazing sheep should be merely regarded as manure machines, and the most that can be expected from them is, on an average of years, that they leave the manure as profit. I find, by experience, that it is a wise thing to dip the sheep before turning them into the orchards in the spring; they graze better and the wool is improved. There is also no cause for them to use the trees as rubbing posts, which they invariably do if they are infested with ticks, and this habit has a very damaging effect on young trees.

(b) There are two methods of grazing with pigs, viz., the close folding, and the open or ranging. Dealing with the close folding system first, a certain area is fenced off with pig gates, and the pigs are left to root up the grass. The fold is moved about every ten days or so, the pigs being, of course, fed upon such foods as boiled potatoes, sharps, meal, etc. It is imperative, however, that the land should be levelled by hand immediately the fold is moved, and when a sufficient area has been so levelled it should be harrowed and rolled. To the inexperienced, it will appear, after this treatment, that the grass is utterly destroyed. No fears, however, need be entertained on this score, as my experience in every case has been that the turf reasserts itself in an extremely short space of time. I have known several orchards, that have borne fruit very indifferently, improved both as regards foliage and fruit after this treatment. I do not recommend that this method should be adopted on the same piece of ground very frequently, and I think that once in every six or eight years is sufficient. This method of pig feeding should be used in conjunction with the sheep, as only a comparatively small acreage can be dealt with each year. The pigs should have some sort of shelter, particularly in the winter months, and if nothing better is available, thatched hurdles will answer the purpose. With regard to the open or ranging system, the pigs should be ringed and then turned out to graze in the orchards. This is not such drastic treatment as the former, and the results are not so apparent, but there is a good deal less labour required, and I think more can be done in manuring in this manner than has been done in the past.

(c) Poultry.—The keeping of poultry in orchards is a practice that has increased very largely of late years, and is capable of still further expansion. One of the chief secrets is to have the birds well scattered, that is to say, have several small houses instead of a few big ones. There is no doubt that poultry destroy a great many of the grubs and insects that injuriously affect fruit trees (although it must be noted that according to the East

Malling experiments chicken take by no means kindly to a diet of "apple blossom weevils"). With proper treatment and care in the selection of really good laying strains, and with the use of up-to-date methods generally, I think there is very little doubt that a reasonable profit may be expected. It is best for the fruit trees that the houses should not have boarded bottoms. I know of an old cherry orchard, that had for many years cropped indifferently, which has during the last few years cropped very consistently, and this result has been obtained largely by the methodical manuring of the fruit trees by chicken manure. The houses are on wheels and without bottoms, and are moved methodically up and down each row of trees. The keeping of runner ducks is also to be recommended, for as their name signifies, they are great travellers, and they are also blessed with very healthy appetites. Ducks however are a great nuisance where young chicken are being reared.

(d) As a general rule the grazing of cattle is not to be recommended in orchards. In some places, where there is no other grazing, cows are turned out, their heads being tied down by straps which pass under the forelegs. Even by the adoption of this method it is almost impossible to raise young trees in orchards so treated. If necessary, however, young calves may be grazed in orchards without doing much harm to the fruit trees. Horses, colts, or goats should never on any account be turned out loose in the orchards.

Orchards should be systematically dragged and rolled every winter and spring, and stones and sticks cleared away. Nettles often thrive, and beds of them have been found extremely hard to eradicate. I recommend the application of common agricultural salt (and this should be applied with no niggardly hand) two or three times during the summer, preferably in the early morning, before the dew is off. If this treatment is persisted with, in three years' time the most obstinate bed of nettles will be entirely exterminated. I have entirely cleared two lots of orchards, containing upwards of 100 acres, from beds of nettles in this way. After the application of the salt it will appear as if the turf has been destroyed, but no fears need be entertained if the work is properly done.

#### CONCLUSION.

The more one looks into the History of Fruit Culture the more one is forced to the unpleasing conclusion that, at any rate, during the last century, but slow progress has been made in the acquisition of scientific knowledge and in the application thereof. We are now, as it were, only scratching on the surface of a rich and partly unexplored field.

Curtler, in his *History of English Agriculture*, tells us, amongst other things, that Hartlib reckoned that there were no less than 500 sorts of apples in England, and that the chief pears for the table were the "Windsor," "Burgamet," "Boon Christians"! and others, that four kinds of grafting were practised, and he gives the wise advice, "Plant not too deep." Hartlib also gives advice on root pruning. Gervase Markham (1568-1637) gives minute directions "as to pruning and washing the trees with strong brine of water and salt either with a garden pump placed in a tub or with 'squirtes' which have many 'hoales,' the fore-runner of modern spraying"!! and one finds in the "Abstract from the Orchardist: Drawn up at the Desire of the Board of Agriculture, 1796," given in the Appendix to the *Survey of Kent*, by John Boys, most interesting and minute directions as to the "medication," pruning, grafting, and protection from cattle. This sentence also appears, which is to a certain extent comforting: "Do not look for perfection; it is sufficient to come near it." Thanks, however, to the energy of the staff of Wye Agricultural College for their researches into insect pests and fungus diseases, to East Malling Fruit Research Station for valuable experiments with regard to apple stocks and pruning, and to the Harper Adams College for good work in connection with the scientific culture of cherries, to mention but a few of the agencies at work, one feels that at last progress is again being made. And one has full confidence in leaving the scientific side, at any rate, of fruit culture in the hands of these energetic institutions.

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## FARMING EQUIPMENT AND FINANCE.

### A SEVEN YEARS' REVIEW (1913-14—1919-20).

THE economic changes that have overtaken the agricultural industry since the year 1914 are without parallel in any period of equal duration in modern history. Taking the farming years 1913-14 to 1919-20 the business of the agriculturist in every aspect has had to be organised to meet conditions for which there was no precedent. Never before within living memory has the State undertaken the control of production or the

regulation of hours of labour and rates of pay ; never before have there been withdrawals of labour on such a wholesale scale ; never before have machinery, plant and raw materials been almost unprocurable over long periods ; never before have the prices of farm produce soared as they did during this time.

It is not the present purpose to detail these changes, to trace their development, nor to consider the adaptations of established farming practice which they necessitated. In general, their effects are well-known ; every one is aware that the price of wheat was trebled and the rate of wages nearly so during the period under review ; that at times fertilisers and feeding-stuffs were almost unprocurable ; that skilled labour was in a measure withdrawn and that work had to be carried on by the substitution of unskilled workers of all sorts ; that the supply of machines and spare parts and the execution of repairs were restricted ; that transport was slow and irregular.<sup>1</sup> These things were a matter of general experience within the industry, and were even common knowledge outside it, but there is no information generally available upon the more important point as to what was the effect of these tremendous movements upon farming economics. Did the steady rise in wages, for example, lead to greater efficiency on the part of the worker in the performance of his labour, or on the part of the farmer in the use and direction of it ; did the dilution of labour combined with the reduction in supplies of fertilisers and feeding-stuffs reduce the productivity of the land ; how was the capitalisation of the industry affected, and likewise the returns on capital ; what changes have occurred in the division of the available surplus as between landlord, farmer and worker ? Such questions cannot be answered for the industry as a whole, because the requisite volume of data is wanting. It would be necessary to have access to the account books of farmers in every part of the country and in every branch of agriculture, but whilst this is not possible a good deal can be demonstrated, and still more inferred, from the experience of farmers as disclosed in only a very few cases, given that these are fairly typical of average conditions and management, and that the statistical data they afford can be relied upon. Accounts kept on several farms during the years 1913-14 to 1919-20 show the same tendencies in all cases so far as they were not affected by some special conditions, and the records of one of these farms are elaborated here to show the general tendency of them all.

The farm in question is located in the Eastern Counties ;

<sup>1</sup> The story of the changes in the Agricultural Industry during the war and all the matters incidental thereto is told earlier in this volume by the writer most qualified so to do. See Lord Ernle, *The Food Campaign of 1916-18*.

it is a tenant holding, 965 acres in extent—734 acres being arable and 231 acres grass. It is situated at a distance of several miles from the railway, and the rent, which was 16s. 2d. per acre in 1913, remained unchanged throughout the whole period under review. The tenant was a first-class farmer, born and bred on the farm, and though without any scientific training he combined a thorough knowledge of farming technique with a sound commercial instinct. The holding may be described as a corn and stock farm, all of it two-horse land, the large arable area being managed on the four-field system, with the occasional variations that necessity so often dictates. Barley is normally the principal cereal, the turnips, which are grown with artificials, being eaten with sheep in preparation for it, and the greater part of the farmyard manure is applied to the seed ley and ploughed in for wheat. A certain amount of "swath barley" is also grown, the oat land being limited to the area needed to produce the corn wanted for home consumption only; peas and beans occur in small but regular quantities. Owing mainly to its location the farm is unsuited to intensive culture, though a small acreage of potatoes is grown annually and an occasional carrot crop. Thus, about one half of the arable land is in corn, of which some 85 per cent. to 90 per cent. is saleable, the balance being grown for home consumption. The clover-break consists as to one half of red clover and rye grass, for mowing, and as to the other half of a mixture without red clover for grazing with sheep. In this way it is not necessary to take red clover more than once in eight years on the same land. The system of manuring is to apply the dung to the mown ley-land, before ploughing, for the wheat crop, and to grow the root crop with artificials.

The grass-land is only moderate, and its condition is maintained by the use of basic slag and a certain amount of cake-feeding.

The livestock comprise shorthorn cattle and long-wool sheep, the former of a general utility type maintained for butter-making and beef production; milk-selling is impossible owing to transport difficulties. The sheep are an arable breed, maintained on grass and on seeds during the summer, and wintered on roots; all the lambs are finished on turnips during the winter with the exception, of course, of a certain number of ewe lambs required to maintain the flock. Pigs are not a large item in the farming, and no horse-breeding is done, a few young ones of the shire type being bought from time to time.

#### LAND AND LIVESTOCK.

Statistically the lay-out of the farm and its livestock equipment appears as follows during the period under review:—

TABLE I.  
*Land and Livestock Statistics.*

Financial Year . . . .	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
<b>LAND :—</b>							
Arable . . . .	734	734	734	734	734	750	750
Grass . . . .	231	231	231	231	231	215	215
Total . . . . .	965	965	965	965	965	965	965
<b>LIVESTOCK :—</b>							
Horses . . . .	29	29	30	30	33	36	36
Cattle (including all classes) . .	168	189	178	177	160	180	187
Sheep (including lambs) . .	734	758	739	774	793	818	819
Pigs . . . .	44	78	112	138	129	100	72
Total Livestock (excluding horses) converted into sheep equivalents . . .	1,464	1,594	1,599	1,554	1,649	1,672	1,805

Dealing first with the *Land* the total acreage remained constant throughout the seven-year period. Less than one-quarter of the whole was in permanent grass, and the proportion of grass-land to arable-land varied hardly appreciably, for on a farm so essentially arable in character it was not to be expected that the local War Agricultural Committee would find much scope for action, and the ploughing out of old grass-land was confined to one small field of sixteen acres which was broken up in the early part of the year 1918.

Turning next to the *Livestock*, it should be noted that the details given in the table represent the stocking of the farm during the first week of June in each year, so that the figures in the first column are those of the livestock on the holding in June 1913, those in the second column that in June 1914, and so on. Not only does this date correspond to that on which the annual census of the Ministry of Agriculture is taken, but also does it represent the beginning of the financial year on the farm under consideration, the farmer for reasons of his own electing to close his books on May 31 in each year. Wherever, therefore, the actual period covered by any twelve months is of importance in the interpretation of any of the figures in this table, or in any

of those following, it should be remembered that each year runs from June 1 to May 31.

The figures for livestock are chiefly noteworthy in that they show a steady and material increase throughout the period; horses, cattle, sheep and pigs have each of them been carried on the farm in greater numbers year by year. This increase might be attributable to the marketing of stock at an earlier age to meet a war-time demand, thus enabling the farmer to augment the head of stock without making any real addition to the weight of stock carried, and to test this the various classes of animals kept have been converted into their "sheep equivalents" according to the following stock-conversion scale:—<sup>1</sup>

Stock.	Equivalent in Sheep.					
Cow or bullock	.	.	.	.	.	7
Other cattle (average for all ages)	.	.	.	.	.	3·5
Pig (average for all ages)	.	.	.	.	.	1·5
Ewe or wether	.	.	.	.	.	1
Lamb	.	.	.	.	.	0·5

The equivalent figures make it quite clear that the increase in the amount of stock carried was not apparent only but also real. Starting in June 1913 with 1,464 sheep units there is a progressive increase until June 1919, when the figure stood at 1,805—an increase, measured in sheep equivalents, of no less than 23 per cent. This increase is the more remarkable when it is remembered that throughout a great part of this period purchased feeding-stuffs for stock and artificial manures for the production of home-grown foods were only to be procured in quantities reduced far below the normal. It may be taken as the measure of the farmer's effort to stretch the stock-carrying capacity of his holding to the uttermost during the period of food shortage.

The changes in the various classes of stock do not indicate any alteration in the system of farming in an attempt to meet the altered economic conditions. The number of working horses remained the same, the increase in *total* horses being due to the purchase of additional young horses to grow on. Cattle and sheep show approximately the same percentage increase (cattle, 11·9 per cent.; sheep, 11·5 per cent.); and the rather irregular movements in the numbers of pigs are no more than the reflection of the general experience with this class of stock.

<sup>1</sup> The accuracy of such a scale is, of course, approximate only, but it has been used with satisfactory results in earlier investigations and it agrees closely with that in use at some of the American Experimental Stations. In its application to any particular case adjustments may have to be made if some of the smaller breeds of sheep constitute the sheep stock.

## LABOUR EQUIPMENT.

(a) *Manual.*

Figures showing the labour equipment of the farm and the changes that were necessitated in it are given in Table II. In its construction the actual numbers of men, women and boys employed from time to time throughout the various years have been re-calculated, according to the duration of their employment, so as to show their equivalents in persons full-time employed—that is, for the whole year. Thus, an extra harvest hand employed for one month contributes only 0.08 to the number of the men, and all other part-time employees have been treated in the same way. But even when this has been done the figures for one year are not readily to be compared with those of any other owing to the varying proportions of male, female and juvenile employment, and with the object of getting statistics which can be contrasted the woman and boy labour has been converted into "men equivalents," and the "Total Labour," shown as men, is then got for each year. In making this conversion the following scale was used:—

<i>Labour.</i>	<i>Equivalent in Men.</i>
Man . . . . .	1
Woman . . . . .	0.6
Boy (average for ages 14-18) . . . . .	0.5
Girl (average for ages 14-18) . . . . .	0.4

As with the livestock conversion scale, so with this, the equivalents used cannot be absolutely accurate, and any material error would have a very disturbing effect on a table where the ratios of men, women and boys show so much variation. Certain tests which can be applied, however, indicate that the figures of this scale constitute a representation of the facts sufficiently accurate for the purpose in view.

TABLE II.  
*Labour Equipment.*

Financial Year	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
<b>LABOUR:</b>							
Men . . . . .	20.2	20.4	19.4	18.8	18.4	17.7	17.9
Women . . . . .	—	—	—	1.8	3.5	4.2	2.1
Boys . . . . .	3.3	3.0	4.7	4.3	4.6	5.1	4.2
Total labour converted into men equivalents . . . . .	21.8	21.9	21.7	22.0	22.8	22.8	21.3
Acreage per man . . . . .	44.2	44.0	44.4	43.8	42.3	42.3	45.2

The first change in the number of men appears during the year 1915-16, in which the farm lost the equivalent of one man

full-time employed. His place is filled by additional young male labour, and the net effect on the total equivalent male labour for the year was *nil*. In fact, the constancy of the total labour requirement of this farm during the first three years of the records is noteworthy. The reduction in man labour is progressive from the year 1915-16 until the year 1918-19, by which time the decline represented 2.5 men full-time employed, and the figure is maintained practically at this level in the following (the last) year. The loss of man power was made good mainly by the employment of women; the juvenile male labour shows little variation after the jump in 1915-16. Women were first employed in the year 1916-17, when their work is represented by the equivalent of nearly two women full-time employed. In the following year (1917-18) the figures rose to three-and-a-half, and it reached its maximum in 1918-19, when the labour equipment included the equivalent of practically four-and-a-quarter full-time women.

With the introduction of women workers the efficiency of the labour on the farm begins to fall, and the extra force required was equivalent, at its maximum (in 1917-18 and 1918-19), to exactly one additional full-time man.

This decline in efficiency is reflected in the quantity of land on the holding per unit of labour. Before the substitution and dilution began each labour-unit covered about 44.25 acres (1913-14 to 1915-16), and by the time that it had reached its maximum the area had fallen to 42.3 acres (1917-18 and 1918-19). Converting the figures into the labour requirements per 100 acres of land it appears that whereas this unit necessitated normally a labour force equivalent to 2.25 full-time men, the requirements at the period of maximum disorganisation were represented by 2.36 men.<sup>1</sup>

It is necessary now to make a close analysis of the distribution of labour to see what was the labour requirement of the main branches of the farming, and how this was affected by the changes that occurred in personnel during the period. For this purpose the farm has been divided into four groups:—(1) Corn crops, root crops and bare fallow; (2) Pasture-land, meadow-land and ley-land; (3) Livestock; (4) General or establishment work. With regard to livestock all classes, excluding working-horses, have been reduced to their equivalents in sheep. The time of the men engaged with working-horses is included in the labour requirement of each division in which the horses were working. The term "men," of course, indicates the number of

<sup>1</sup> The labour figures for the year 1919-20 vary considerably from those of the preceding year, and too much reliance should not be placed upon them as the farm was given up at the end of this year, and it is probable that work was curtailed in certain directions.

men, women and boys reduced to their equivalents in men employed full-time throughout the year.

The results of this division of labour are shown in Table III.

TABLE III.  
*Labour Distribution and Efficiency.*

Financial Year . . .	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Crop acres per man :-							
(a) Corn, roots and fallows . .	46.8	47.6	49.6	45.4	38.5	41.5	45.9
(b) Pastures, meadow and seeds . .	221.9	535.7	300.4	222.2	365.7	501.4	375.3
Livestock (sheep equivalent) units per man . . .	197.3	203.1	229.7	233.6	312.4	259.6	346.7
Establishment (total men) . . .	0.8	1.0	2.0	1.1	1.6	1.2	1.5

An examination of the figures indicates that the reduction in the efficiency of labour was confined to the work on the arable land, where the quantity of land handled per unit of labour declined from a maximum of  $49\frac{1}{2}$  acres in 1915-16 (with an average of 48 acres for the three years 1913-15-1915-16) to a minimum of  $38\frac{1}{2}$  acres in 1917-18. The labour requirement on the grass and ley-land shows extraordinary variations, but very little importance can be assigned to these, for the total labour expended in any year was so small that even a trifling variation from one year to the next produces a very large difference in the amount of land per unit of labour. Thus, in 1913-14 the grass and ley-land of the farm required the work of 1.8 full-time men, whereas in the following year the labour on this section amounted to a matter of 0.7 men. As the amount of labour is so small in comparison with the quantity of land the application of any efficiency test is practically impossible, but the figures as they stand do not suggest that there was any reduction under this head during the period under review.

With regard to the livestock, the number of sheep equivalent units handled per man shows a progressive increase throughout the period, except in the case of one year (1918-19). Examining the farm records it appears that whereas the number of equivalent full-time men engaged with stock varied very little throughout the period (except in the year 1918-19) there was a considerable increase in the amount of livestock carried, so that in this department of the farm there was an actual gain in the efficiency of labour, or of its direction.

The figures representing the number of men required for

general establishment purposes are interesting as indicating that on a farm of this nature about one-and-a-quarter full-time men are required for general maintenance works. The exceptional expenditure under this head in one year (1915-16) is explained by the fact that an abnormal amount of drainage work was undertaken.

(b) *Horse Labour.*

Turning now to the horses, the distribution of the horse-labour employed upon the farm has been made on the same basis as that of manual labour. As regards arable land it indicates, that on this light two-horse farm the old estimate of a pair of horses for every 50 acres is rather too high, for in the worst year (1917-18) one team sufficed for each 55 acres of land and in the best year (1919-20) for 66 acres.

TABLE IV.  
*Horse-Labour Distribution and Efficiency.*

Financial Year . . .	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Crop acres per horse :							
(a) Corn, roots and fallows . .	28.0	31.8	29.4	29.0	27.5	28.7	33.0
(b) Pastures, meadow and seeds	337.2	669.6	357.2	325.2	541.0	389.4	334.0
Livestock (sheep equivalent) units per horse . . .	1262	759	717	747	808	815	637
Establishment (total horses) . . .	0.7	1.8	0.3	0.3	0.3	0.2	0.1

The wide variations in the horse-labour requirement for grass and ley-land are explained, as in the case of manual labour, by the smallness in the amount of the horse-labour used on it when compared with the quantity of the land, so that a very small increase or decrease in it has an altogether disproportionate effect upon the acreage of land covered.

The most striking fact about the horse-labour equipment and its efficiency is its stability. There is no reduction in the efficiency of the work on arable land and there is a small, though hardly measurable increase as regards livestock.<sup>1</sup>

Summarising the results of the table it may be stated that on this holding the work of one horse is required for each 30 acres of arable land, that of one more for each 800 units of livestock, and that if to the total thus arrived at one more horse

<sup>1</sup> The year 1913-14 is abnormal.

be added the farmer will be equipped to deal with the grass land and general establishment work as well.

#### THE WORKERS' REMUNERATION AND THE COST OF LABOUR.

The changes from year to year in the total labour equipment of this farm expressed in man equivalents have been shown to be slight (see Table II), but on most farms the changes in personnel were usually considerable as the needs of the Army became more and more insistent. It will be observed that no change had occurred before the year 1916-17, the area being somewhat remote from any large military centre, and transport difficulties tended to check the employment of men on national work at a distance from their homes. The period of maximum disturbance was reached in 1918-19, in which year the reduction in equivalent full-time men amounted to two-and-a-half (that is, to 12½ per cent.) and their place had been taken by four-and-a-quarter women and about one-and-a-half additional boys.

The dilution of labour was not the only disturbing factor with which the farmer had to deal. Wages began to rise very soon after war broke out, and this was due more, probably, to the demand for civilian labour for unskilled work on Government contracts, principally building, than to the effect of recruitment for the Army. It is well known that in certain areas the farms were almost completely denuded of labour and in most other localities the influence was felt in varying degrees. Government contractors were more concerned to get work done than to consider costs, so that wages on public works rose speedily to figures previously undreamed of by the farm worker, but except in areas of great military concentration, with their insatiable demand for labour, the effect, though immediate, was only slight in the early years. On the farm under consideration the general rate of pay rose 16 per cent. between June 1914 and June 1915, and a further 6 per cent., making 22 per cent. in all, by June 1916. During the next two years the rate of increase developed more rapidly, being represented by a further 22 per cent. by June 1917, and 24 per cent. again in the next twelve months. This last date (June 1918) coincides practically with the date of operation of the first Order of the Agricultural Wages Board, and up to this point wages had risen by some 70 per cent. over the pre-war rate. The effect of the control of wages by the Board was two-fold. Not only did it speed up the rate of increase of weekly wages, but also by defining the length of the normal working week and providing overtime rates for hours spent in excess of this period it brought about an additional rate of increase in the case of all those workers whose occupations necessitated regular employment in excess of the defined working

week. The combined effect of these influences on the earnings per man employed is very marked, for, on the farm in question, the average rate of pay rose no less than a further 53 per cent. between June 1918 and June 1919 over the pre-war rate, bringing the total increase at this latter date up to 123 per cent., and by the end of the year following an additional rise of 24 per cent. had taken place. Thus by the spring of 1920 the rise in earnings per man employed represented an increase of 147 per cent. over the pre-war scale of pay.

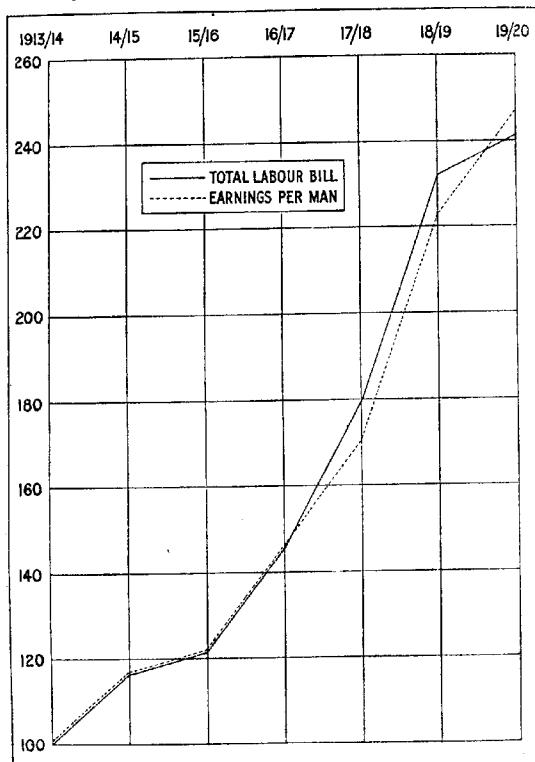
The farmer, however, is more concerned with the rise in his total labour-bill than with the rise in wages. When wages are low there is no pressing need for its economical use and the manager is not particularly interested to consider means for the increase of the output per unit of labour. In fact, experience has shown, sometimes, that in the past the labourer was the cheapest machine, and that certain operations which would appear at first sight marked out for execution with the aid of machinery could be done more cheaply, if more slowly, by manual labour. The position was altered, radically, by the rise in wages which took place during the period now under review, and it might be expected that a wage-rate approaching an advance of 150 per cent. on former scales would stimulate the manager to consider ways and means for getting a larger output per unit of labour, with the object of securing some offset to the increase through a reduction of men. Again, it is an old assertion that "all labour costs the same," and if this be true the increased wage should result of itself in a higher scale of efficiency, and a consequent reduction of staff, without any effort on the part of the farmer.

With the object of testing the relation of wages to efficiency of labour and of its direction the accompanying graph was prepared (Graph I) to show the change in the total labour-bill and in the earnings per man. For its construction the total labour-cost and the average weekly wage-rate in 1913-14 are represented by 100, and the changes year by year in the two items are then indicated with reference to this initial figure. It will be observed that until the end of the year 1916-17 the rise in the total labour cost was identical with the rise in the rates of pay, and that it was not until the substitution of a certain amount of female and extra boy labour for some of the men necessitated the employment of additional labour, equivalent to one full-time man, that any difference in the ratio occurred. The date of this substitution coincided very closely with the date of commencement of the operation of the Orders of the Agricultural Wages Board, and the combined effect was in the direction of a small reduction in the efficiency of the farm labour. From the end of the year 1916-17 until the middle of the year

1919-20 the total cost of labour showed a higher rate of increase than the rates of pay, but it is interesting to note that the whole

GRAPH NO. I.

*Changes in Total Labour-bill and in Earnings per Man.*



100 represents Total Labour-bill and Earnings per man in 1913-14.

of the difference shown during this period was introduced in the first twelve months, and that after the farmer had adjusted himself to the new conditions brought about by substituted labour and Wages Board Orders, a fresh equilibrium was estab-

lished in the ratio of the labour-bill to rates of wages which remained constant until the last year of the records (1919-20). In this year a change occurred, the rate of increase in the labour-bill being exceeded for the first time by the rate of increase in wages. It would not be safe to draw the conclusion that the farmer had now responded to the stimulus of high wages in the direction of securing greater economy in the use of labour, for, as has been noted already,<sup>1</sup> the farm was given up at the end of this year and it is probable that labour on less directly productive work was being curtailed.

The Graph confirms, of course, the facts brought out by the figures in Table II, showing the changes in the labour equipment of the farm, and it indicates quite clearly that there was no response either by the farmer or by the farm worker to the stimulus of higher wages.

#### EXPENDITURE AND INCOME.

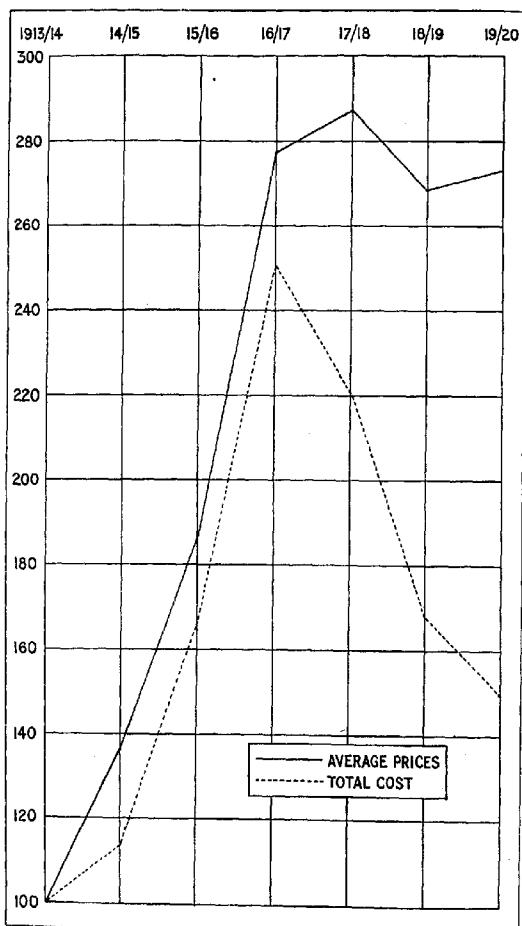
The experience of the farmer in connection with wages applied equally to everything that he had to buy. The cost of implements and machinery, of feeding-stuffs and manures, of sundry materials and purchases of every kind underwent spectacular rises throughout the seven-year period under consideration. But whereas it has been shown that the rate of increase in the expenditure on labour was never less than the rate of increase in wages, and even exceeded it in some years, this was not the experience with regard to many of the principal items of farm expenditure, and with quotations for the raw materials of the industry continually before them in an ascending scale farmers were apt to overlook the fact that the restriction in available supplies exercised a very considerable effect on the ratio of prices to expenditure. Feeding-stuffs and fertilisers are two of the principal items of expense in the farm budget, and the facts concerning them have been taken to illustrate the point.

In Graph No. II the position as regards feeding-stuffs is indicated; the average price on this particular farm and the total cost in the first year is represented by 100, and the changes in each during the subsequent years have been plotted with reference to these figures.

There was a continuous rise in the average price of foods until the end of the year 1917-18, amounting to 187 per cent. over the initial figure, and up to the previous year (1916-17) the increase in cost to the farmer kept pace, approximately, with it (a rise of 151 per cent. in cost, compared with 177 per

<sup>1</sup> See footnote, page 137.

GRAPH NO. II.  
*Changes in Prices and Purchases of Feeding Stuffs.*

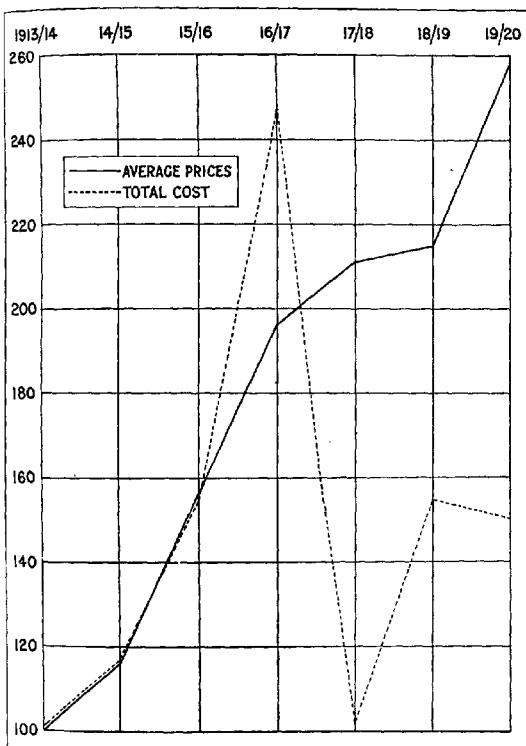


100 represents Average Prices and Total Cost in 1913-14.

cent. in price). After 1916-17, however, although the rise in prices was held the purchases fell away abruptly, so that in the last year of the period (1919-20) they represent a rise of 50 per cent. only, contrasted with a rise in price of some 163 per cent.

The figures relating to artificial manures are similar. The rise in average price is continuous throughout the seven years and represents, finally, an increase of no less than 158 per cent.

GRAPH NO. III.  
*Changes in Prices and Purchases of Artificial Manures.*



100 represents Average Prices and Total Cost in 1913-14.

on the 1913-14 figure. As regards purchases, the farmer pursued his normal course until the end of the year 1915-16, the rise in purchases up to that time being equal to the rise in prices. In the following year the quantity of fertilisers used increased very materially—possibly under the stimulus of the rise in the prices of produce—and the purchases at this date show a rise of 147 per cent. over the 1913-14 figure, compared with a rise in price of 96 per cent. only. In the following year, however, a great decline took place, the quantity bought being reduced to less than one-half the previous normal (*i.e.* a rise in expenditure of 2 per cent., compared with a rise in price of 111 per cent.), and this position was maintained, approximately, until the end of the period.

It is necessary, now, to consider what was the effect of this reduction in the use both of feeding-stuffs and of fertilisers on the productivity of the farm. It has been asserted, not infrequently, that the impossibility of obtaining the normal supplies of each led to a material reduction of output, but the statement is not borne out by such figures as have been collected at Oxford. Referring again to the farm under review a chart has been prepared to show the relation of the Index Number of the Prices of Produce<sup>1</sup> to the value of the net output of the farm year by year.

A glance at this chart (Graph No. IV) makes it clear that up to the end of the year 1918-19 there had been no measurable diminution of output, for the variations which occur are no more than any given farm might be expected to show when compared with an average—a rise of 150 per cent., at the end of 1918-19, in the value of the net output compared with a rise in the index number of the prices of produce of 158 per cent. In the last year there is a considerable change, for whereas the index number in 1919-20 had risen to 192 per cent. of the initial figure there was a reaction in the value of the net output to 117 per cent., but this is explained by the fact, already noted, that the farm was given up at the end of the year, and certain of the livestock which would have been sold, normally, during this financial year and thus would have increased the output, were held back to be dealt with at the end of the tenancy.

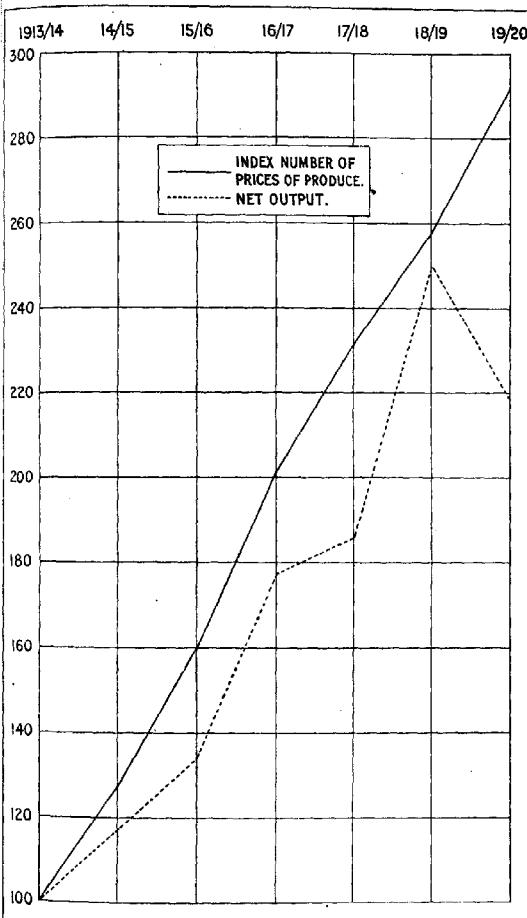
Thus, there is no evidence of loss of output on the average farm, where a fair standard of fertility had normally been maintained, owing to the temporary restriction of the use of fertilisers and feeding-stuffs. What the effect might have been had this restriction continued can only be conjectured.

Purchased foods and manures are the two largest items of

<sup>1</sup> *i.e.* The weighted average price of the principal farm products as calculated by the Ministry of Agriculture and published annually by them in *Agricultural Statistics* (Part I).

## GRAPH NO. IV.

*Comparison between the Value of the Net Output and the Index Number of Prices of Produce.*



100 represents Index Number and Value of Net Output in 1913-14.

expenditure on most farms and the increased cost of the remainder was insufficient to counteract the reduction in the use, and consequently in the outlay, on these two. Throwing all purchases together it is seen (Graph No. V) that the maximum increase in cost was reached in the year 1916-17, when it had risen by 84 per cent. above the initial figures. Labour had increased in a ratio less than that of materials and omitting the wages bill the rise in total payments was higher, amounting to 100 per cent., exactly, above the 1913-14 figures. Wages and the labour bill continued to rise after the year 1916-17, and the effect of the increase was to set off, approximately, the decline in the amount spent on other things, so that for the remainder of the period the changes in total payments are practically negligible, showing a decline from the highest point touched (in 1916-17) until 1919-20 of 6 per cent. only. In the line representing the changes in Total Payments *less* Wages the restriction of supplies makes itself felt, and there is a continuous and sharp decline from the year of maximum increase.

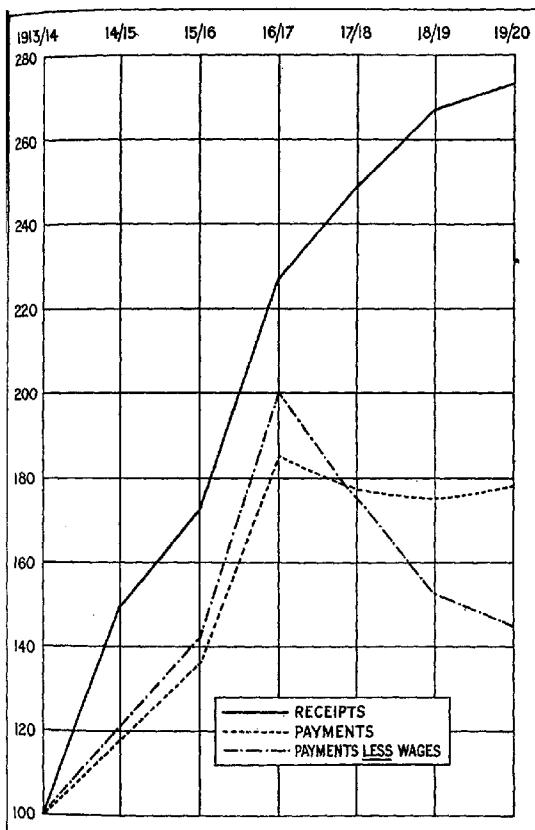
In brief, it may be stated that the farmer's expenditure increased by about 80 per cent. during the war, and that the whole of this increase occurred in the first three years. The results on other farms where records are available are not less favourable.

Turning now to Income, the changes in total receipts are indicated on the same graph (No. V) and show an unbroken rise throughout the whole period. The increase is sharper in the first three years following 1913-14, amounting to 127 per cent. above the value in that year by the end of this time, and from this date the line flattens out a little so that the rise in income during the three subsequent years represents a further increase of 46 per cent. only, making 173 per cent. in all by the end of the financial year 1919-20. The income of this year was some what affected by the fact that the farm was being given up at the end of it.

Considering the changes in income and expenditure as they appear when plotted, it seems that as regards the latter the farmer was successful in establishing a new normal for the farm payments when he had accustomed himself to the new conditions, but as regards the former the demands of an always unsatisfied market prevented the creation of anything approaching to a new equilibrium in his total income.

In Table V the proportions which the principal items of expenditure bear to the total payments have been worked out year by year, so as to show the effect of changes in value, and of changes in the conditions under which farming was conducted during the period, on the allocation of the farmer's expenditure. It will be noted that except in the case of wages and of rent

GRAPH NO. V.  
*Total Receipts and Total Payments.*



100 represents the Total Income and Total Expenditure in 1913-14.

there is very little difference in the ratio of the expenditure on one item to another as regards the principal items. In some of the smaller items the effect of the changed conditions is far more marked, particularly in the case of seeds and implements.

TABLE V.  
*Analysis of Total Payments.*

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Wages . . . . .	27.86	27.00	25.06	21.98	28.45	37.34	40.84
Foods . . . . .	26.87	25.56	32.88	36.46	33.52	25.75	22.66
Rent, Rates and Taxes	17.74	15.00	14.15	10.49	11.18	11.15	10.89
Manures . . . . .	6.68	6.43	7.55	8.93	3.84	5.91	5.64
Tradesmen's Bills. .	4.43	5.68	7.02	4.11	7.59	7.68	7.58
Cattle . . . . .	3.14	1.43	—	0.81	0.78	0.53	—
Motor . . . . .	3.13	2.61	3.11	2.24	3.17	3.02	3.29
Seed . . . . .	2.23	3.19	4.69	4.05	5.03	2.74	3.97
Pigs . . . . .	1.78	0.78	0.75	0.79	—	0.32	0.34
Calves . . . . .	1.73	1.77	0.79	0.89	1.16	0.36	0.39
Sheep . . . . .	1.68	5.91	0.08	5.51	—	0.23	1.04
Veterinary Fees and Medicine. .	0.72	0.62	0.65	0.48	0.77	0.74	0.99
Implements . . . . .	0.65	2.56	1.61	2.15	1.51	2.42	0.82
Repairs to Implements	0.57	0.54	1.01	0.81	0.22	0.94	0.88
Cows . . . . .	0.46	0.06	—	—	—	—	—
Shoeing . . . . .	0.33	0.49	0.65	0.30	0.44	0.58	0.67
Horses . . . . .	—	0.37	—	—	2.34	0.29	—
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

A similar analysis has been made of the total receipts. The ratio of one item to another in this case would have been more constant but for the fact that certain changes of cropping were introduced in the latter years of the period to meet the special needs of the community during the war. Thus, it will be seen that the receipts from barley declined whilst those from wheat increased ; there is also a very high percentage rise in the receipts from potatoes, whilst a new crop—carrots—makes its appearance in the last two years. Allowing for these changes in the cropping, it is evident that the rise in prices was fairly uniform in the case of all commodities, and this is true also of livestock and livestock products.

TABLE VI.  
Analysis of Total Receipts.

	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Barley . . . . .	24.03	21.91	18.86	14.88	8.90	11.33	13.99
Sheep . . . . .	18.64	18.76	17.01	22.51	14.14	15.18	12.19
Wheat . . . . .	14.90	18.37	14.00	16.87	28.50	17.83	17.62
Cattle . . . . .	13.72	4.56	16.19	9.60	8.58	8.05	2.95
Pigs. . . . .	8.35	5.41	14.97	8.54	11.06	7.78	8.91
Cows . . . . .	6.98	5.32	2.66	3.00	2.59	5.13	—
Butter . . . . .	5.60	4.61	4.47	4.45	4.15	4.03	3.92
Poultry and Eggs . . . . .	3.36	2.91	3.67	4.27	5.28	4.91	3.77
Horses . . . . .	1.60	2.42	—	—	0.46	1.77	1.59
Potatoes . . . . .	1.06	1.56	1.32	5.61	5.40	8.93	10.21
Oats . . . . .	0.93	5.20	1.87	3.11	3.15	—	2.27
Sundries . . . . .	0.56	1.92	0.54	1.09	0.64	0.72	2.37
Milk . . . . .	0.27	0.18	0.22	0.21	0.24	0.53	0.63
Beans . . . . .	—	3.29	0.85	1.45	1.53	4.20	2.20
Peas . . . . .	—	3.58	2.22	0.98	1.35	3.12	6.26
Hay . . . . .	—	—	1.15	—	—	—	—
Mustard . . . . .	—	—	—	2.70	—	—	1.24
Roots . . . . .	—	—	—	0.73	—	—	0.24
Carrots . . . . .	—	—	—	—	4.03	6.49	1.17
Keep of Stock . . . . .	—	—	—	—	—	—	8.47
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

## CAPITALISATION.

In considering the capitalisation of agriculture it is of primary importance to establish a proper basis of valuation. Farming presents a close analogy to manufacturing business, but in it there is a more continuous replacement of "plant" than in most industrial concerns. A dairy herd, or a ewe flock, correspond to factory machinery in that they are part of the permanent equipment of a farm producing milk, mutton and wool, but it is an equipment which is entirely replaced every few years; the herd or flock may be permanent but a considerable percentage of their component parts are annually drafted out and their place taken by others. But this does not justify the practice, almost universal in agriculture, of valuing farming capital upon the basis of its market value at the moment, and in considering the capitalisation of the farm under review the basis of valuation adopted has been cost, or cost less depreciation whenever some deduction for wear and tear was needed. The increase in the capital in the farm represents, therefore, no more than the additional cost of labour on unfinished products and of replace-

ments of equipment; such facts, for example, as that a horse bought in 1913-14 for £40 might have been worth £120 on the market in 1917-18 have not been allowed to influence the figures.

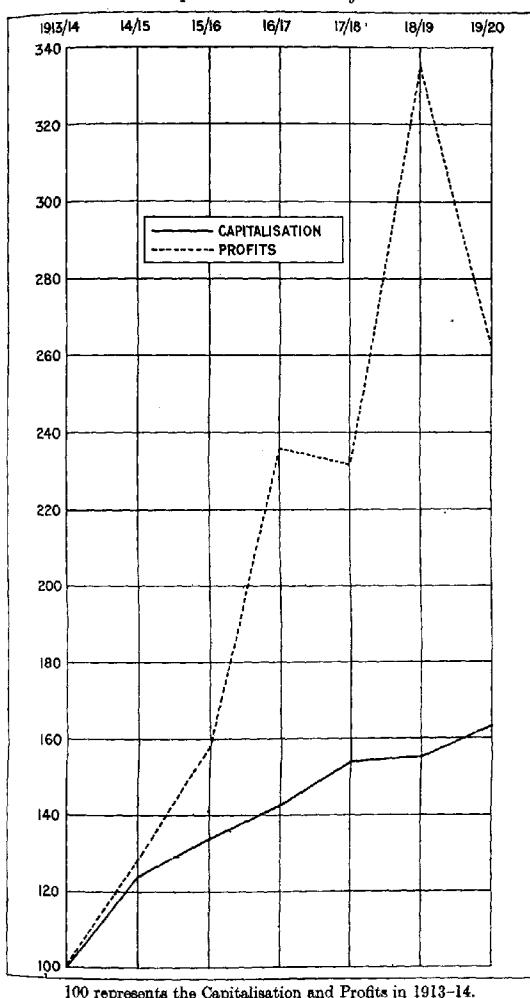
The capitalisation needed shows a sharp and fairly uniform increase up to the end of the financial year 1917-18 when it reached a figure about 53 per cent. above the initial amount. In the year following the increase was only slight, but the advance was then renewed at about the previous rate, the total increase in capitalisation at the end of the period being about 63 per cent. This is considerably less than figures commonly quoted and it must be remembered that it represents the increased capital required of a man who started in business before the rise in prices had begun; anyone taking over a farm at any later time would have had to equip himself entirely at the prevailing market prices and he would have required a proportionately higher capital sum for the purpose. A common estimate places the capital needed to stock a farm in 1920 at double the amount required in 1914, and if this be true the figures available in this case indicate that the equipment of the farm is replaced entirely once in twelve years.

#### PROFITS.

The relation of total payments to total receipts has already afforded an indication of the changes in the profits of the farm and these are set out graphically alongside the changes in capitalisation (Graph No. VI). They show the influence of the increased cost of bringing colonial and foreign supplies to the British consumer, which had the effect of giving the farmer at home a heavily protected market.

It should be noted that the profits shown are those actually realised, and that they do not include anything accruing from the enhanced market value of the farmer's plant and stock except in so far as any part of them may have been realised. Further, it must be remembered that in arriving at the profits no charge has been made for management, and of course the net income from farming must be sufficient to include a reward to the farmer for his services in this capacity, in addition to giving him an adequate return on his capital.

It will be observed that during the first year the increase in profit was no more than the increase in the capitalisation would require, assuming that the ratio of the two in 1913-14 was a fair one, having regard to the risks inherent to the industry, but that in the subsequent years there was no stable relationship between the capital invested in the farm and the returns thereon. The high-water mark of profit was reached in 1918-19, and

GRAPH NO. VI.  
*Capitalisation and Profits.*

everyone concerned with the agricultural industry is aware that the decline in net returns which set in during the following year has been even more spectacular than the rise which preceded it, though in the case of the farm under review figures are not available to show it.

#### THE DISTRIBUTION OF THE NET RETURNS FROM THE FARM

The Net Return from agriculture is the sum remaining after all expenses incurred in production and maintenance have been met, and it represents the fund available for a payment to the landlord by way of interest on his equipment (*i.e.* the net rent), for the remuneration of labour and for the farmer's reward as manager.<sup>1</sup>

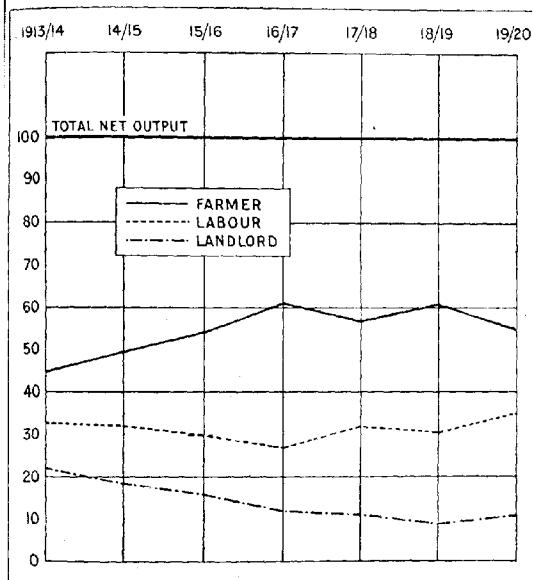
An examination of records collected before the war showed a marked degree of similarity in the rate of distribution to each of the three parties interested, notwithstanding considerable difference in types of farming, locality, and so forth. About 40 per cent. of the net returns went to the farmer, the same proportion to the workers and about 20 per cent. to the landlord. In the case of the farm under consideration farmer and landlord got rather more than the average, 45 per cent. going to the farm, 22 per cent. to the landlord, and only 33 per cent. to labour. In the accompanying Graph (No. VII) is shown how this rate of distribution varied in the subsequent years. As indicated already the net profit from the farm rose very materially during this period, and consequently the net returns rose also. If each interest had received a share of this increase based on its previous proportion the chart would have been constructed of three parallel lines, but the figures show that only in the case of labour was anything approaching the original rate maintained, and in its case a slight decline is indicated during the first three years. The landlord's share declined steadily throughout the period, no increase in rent having occurred, and speaking broadly it may be stated that the farmer took his original share *plus* that which would have gone to the landlord on the previous basis of distribution, whilst labour continued to take the same proportionate amount as at the outset.

The farmer's position in the agricultural partnership is that he takes most of the risks of the business; to a certain extent these risks are shared by labour, and to a small extent by the landlord, but the latter always has the right of foreclosure and the worker's claim to wages must be satisfied before the farmer received the reward of his enterprise. If, therefore, the landlord occupies a position analogous to that of the debenture holder,

<sup>1</sup> For details of the method adopted in ascertaining the value of the Net Returns, see Orwin, *Farming Costs*, pp. 109-11.

and the labourer to that of the preferred shareholder, then the farmer, as the deferred shareholder, is entitled to the bulk of the increase in times of exceptional prosperity. Should this prosperity be continuous, the position both of the landlord and of the worker would sooner or later be adjusted to it, but temporary fluctuations in farming fortune cannot be reflected fully in wages, nor at all in rent.

GRAPH NO. VII.  
*The Distribution of the Net Returns.*



The labour line in the graph is of especial interest in view of the regulation of wages by the State, acting through the Agricultural Wages Board, during the latter part of the period. Although it has been shown that the rise in the labour bill by the end of the financial year 1916-17 had amounted to some 47 per cent., this was not fully proportionate to the rise in the

net returns, so that labour's share of this sum is on a descending scale. The immediate effect of the Wages Board Orders is to stop this downward tendency, and on this farm, at all events, eloquent testimony is borne to the success of the Board in that, working as it was bound to do more by bargain and compromise than by logic or statistics, it continued thereafter to secure to the farm labourer his full share of the increased prosperity of agriculture.

Perhaps one of the most interesting conclusions to be drawn from the various tables and charts presented here is the evidence they afford of the high standard of efficiency of organisation in the management of this farm. The withdrawal of skilled labour, involving the substitution of less skilled workers, was met by the addition of the equivalent of one full-time man and the labour equipment was then stabilised on this new basis while the war period lasted. The total outgoings, which rose sharply in the early years, soon found a new normal at which they then remained. The lack of fertilisers and feeding-stuffs produced no measurable diminution of output. Whilst it is impossible to draw general conclusions from a particular case, and although the number of farming records which have come under the writer's notice are relatively few, it should be stated that all the available figures bear witness to the general application of those given here, and there is no reason to doubt that they afford a fair indication of the general experience of farmers during the period covered by them. The figures should, however, have more than a historical value. One of the great needs of the present time is to have some means of examining and testing the efficiency of management on the farm. Statistics for total production are worthless as an indication of efficiency, in fact, in times of falling markets a high standard of production may well be an indication of extravagance and inefficiency. The student of agricultural economics could do no greater service to the farming industry in these days than by assisting to establish for all clearly defined farming districts certain standards of efficiency which could be utilised by individual farmers within such districts as a means of testing the organisation of their business. What should be the equipment in manual labour required per unit of land; how much per unit of livestock; how much for general maintenance? What is the horse labour required for the same purposes? What is the proper ratio of land, capital and labour to each other to secure efficiency in production? This aspect of agricultural investigation has been almost entirely overlooked in the organisation of research work in this country, and nothing is likely to prove of more value to the industry in the future, for the economic factor overrides all others. Many processes calculated to increase production in agriculture are

possible which are not profitable, and if farming is to succeed in the face of the difficulties which nowadays beset it, its success will be in proportion to the extent to which its economic organisation is perfected.

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## CONTEMPORARY AGRICULTURAL LAW.

### I.—LEGISLATION.

THE year 1920 saw the passing into law of the very important Agriculture Act, 1920, which was dealt with on page 114 and following pages of Vol. 81 of this journal. Soon after the commencement of the Parliamentary Session of 1921 it was found necessary to pass the Agriculture (Amendment) Act, 1921 (11 & 12 Geo. 5, c. 17) for the purpose of correcting two slips and supplying an omission in the Act of 1920. The omission was as to the nature of the arbitration, under Section 10, for determining the rent to be paid for a holding. It is provided by the Act of 1921 that it is to be an arbitration under the Agricultural Holdings Act, 1908, that is to say, before a single arbitrator appointed, in default of agreement, by the Minister of Agriculture and Fisheries. The two slips corrected were (1) in the amendment contained in the Agriculture Act, 1920, of Section 1 of the Agricultural Holdings Act, 1908, and (2) in provision of Section 12 of the Agriculture Act, 1920, where the words "recoverable summarily *by* the tenant" had been used instead of "recoverable summarily *from* the tenant," in respect of compensation to a workman occupying a cottage let with a farm.

The Corn Sales Act, 1921 (11 & 12 Geo. 5, c. 35) was passed to provide for greater uniformity in the weights and measures used in the sale of corn and other crops. It provides by Section 1 that contracts, bargains, sales, or dealings relating to corn shall, unless made by weight only and in terms of and by reference to the hundredweight of 112 lbs., be null and void. There are, however, exceptions: (1) in the case of sales of less quantity than 112 lbs.; (2) in relation to corn not within the United Kingdom, and to corn imported into the United Kingdom so long as it remains in the warehouse or store or shed where first

stored on importation ; (3) in relation to corn imported when the contract provides for delivery in the original bags in which it was imported ; (4) in relation to corn bought or sold for export from the United Kingdom ; (5) in relation to corn growing on the land and to corn unthreshed. The same Act amends the Corn Returns Act, 1882, by providing that the weekly summary of quantities and prices of British corn shall be computed with reference to the hundredweight of 112 lbs., and that the septennial average shall be computed in like manner. Section 3 enacts that where under the provisions of any Act or award or other instrument, any payments are to be calculated on the price or value of an imperial bushel of wheat, barley or oats, these provisions shall have effect as if the payment was to be calculated on the price or value of 60 imperial pounds of wheat, 50 imperial pounds of barley, or 39 imperial pounds of oats, as the case may be. "Corn" is defined as including wheat, barley, oats, rye, maize, and the meal and bran derived therefrom, and any mixture thereof ; and the Act is to apply to dried peas, dried beans, linseed and potatoes, and to the seed of grass, clover, vetches, swedes, field turnips, rape, field-cabbages, field kale, field kohl-rabi, mangels, beet and sugar beet, flax and sainfoin in like manner as it applies to corn. The result is to render sales of corn by the local measures, once so much in vogue, void and to introduce uniformity in such sales throughout the country.

The Corn Production Acts (Repeal) Act, 1921 (11 & 12 Geo. 5, c. 48) is probably already well known to agriculturists. It repeals the Corn Production Act, 1917, and Part I of the Agriculture Act, 1920, which was an amendment and extension of the former Act, with an exception from the repeal as regards the payments in respect of the wheat and oat crops of 1921. There is also an exception of the provisions in the Acts of 1917 and 1920 relating to the destruction of certain injurious weeds, *viz.* : spear thistle, creeping or field thistle, curled dock and ragwort, and authority may be given by the Minister of Agriculture and Fisheries to Agricultural Committees of counties and boroughs to exercise the powers of the Minister requiring the occupiers of land to cut down or destroy these weeds under penalty of a fine not exceeding £20 in case of default, and a further fine not exceeding 20s. for every day during which the default is continued in effecting such cutting down or destruction. Section 3 creates a special fund for promoting agricultural development, including the establishment of scholarships and maintenance grants for the sons and daughters of agricultural workmen and others, and the sum of £1,000,000 is to be provided for this fund in the financial year ending March 31, 1922. Of this sum £850,000 is to be paid to the Development Fund for

liding and developing agriculture in England and Wales, and £150,000 to the Agriculture (Scotland) Fund. The repeal of the Corn Production Act, 1917, having put an end to the compulsory fixing of minimum wages for agricultural labourers by the Agricultural Wages Board, it was thought desirable to provide for the place of that Board and District Wages Committees hereunder being taken by voluntary joint councils of employers and workmen in agriculture for the purpose of dealing with wages, or hours or conditions of employment. Section 4, accordingly, empowers the Minister of Agriculture and Fisheries to take such steps as he may think best calculated to secure the voluntary formation and continuance of local joint conciliation committees in England and Wales. It also provides (Sub-section 2) that the persons who at the date of the passing of the Act (August 19, 1921) were members of a district wages committee for any area as representatives of persons employing workmen in agriculture, or of workmen engaged in agriculture, shall, until the expiration of two years from that date, or until a joint conciliation committee is formed, be a joint conciliation committee for the purpose of dealing with the matters aforesaid within any part of the area for which a joint conciliation committee does not exist. When any joint conciliation committee has agreed upon a rate of wages for any class of persons employed in agriculture in the district for which the committee is formed, and has agreed as to the period during which the rate is to operate, it may submit the agreement to the Minister for confirmation, and he may confirm the agreement and cause it to be advertised in the district to which it applies (Sub-section 3). Where any rate of wages has been so agreed, confirmed and advertised, it will be an implied term of every contract for the employment after the specified date of a workman of any class to which the agreement applies, that the employer shall pay to that workman wages at not less than the rate payable under the agreement. Proceedings for the recovery of such wages must be commenced before the expiration of three months after the date when the workman left the employment, and a person will not be entitled to recover wages for more than three months or for such longer period not exceeding one year as the Court shall consider just (Sub-section 4). Where any rate of wages has been fixed under this section nothing in any contract of employment of a workman will operate to deprive him of his right to receive wages at that rate, except (a) where the committee or a sub-committee thereof is satisfied that the contract for payment of wages at a lower rate was, having regard to any special circumstances affecting the workman or to the special terms of the contract, fair and reasonable, and issues a certificate accordingly; or (b) where the committee

or sub-committee, having failed to agree with respect to the matter, the Court in which proceedings are taken for the recovery of wages at the rate agreed by the committee, is so satisfied (Sub-section 5). A joint conciliation committee may appoint an independent person to act as chairman without the power to vote except in respect of any particular matter, in respect of which the committee agrees that he shall have the power to vote (Sub-section 6). In this section "agriculture" includes dairy-farming and the use of land as grazing, meadow, or pasture land, or orchard, or osier-land, or for market gardens or nursery grounds, but not woodland or woodland nurseries (Sub-section 9). Section 5 deals with the right given to occupants of "tied cottages" by Section 12 of the Agriculture Act, 1920, to compensation for disturbance, and is rendered necessary by the abolition of district wages committees by the repeal of the Corn Production Act, 1917. The powers which were given by the Act of 1920 to district wages committees to give a certificate that the termination of occupation of such a cottage is necessary or expedient for the working of a holding and to determine whether compensation is payable to an occupier thereof and the amount of the compensation is now conferred on the Court of Summary Jurisdiction for the district in which the house is situate. It is also enacted that for the purpose of compensation the year's rent of the house shall be taken to be the sum of £7 16s., or if it is shown that that sum exceeds an amount equal to fifty-two times the weekly rental value of the house let free from rates, then such last mentioned amount.

## II.—DECISIONS OF THE COURTS.

1. *Labour.* In *Hampton v. Winward* (90 L.J.K.B., 1102 [1921], 2 K.B. 669) three women were employed at a farm house in Cheshire for part-time each day solely for the purpose of milking cows, and were paid wages at a rate less than the minimum rate as fixed by the orders under the Corn Production Act, 1917, applicable to female workers in agriculture. It was held that they were not "workmen in agriculture" within the meaning of the Act, and were therefore not entitled to the minimum rate of wages provided by the Act. This case loses some of its importance in consequence of the repeal of the Corn Production Act, 1917, though it would still be relevant where rates of wages have been agreed by a joint conciliation committee under the Corn Production Acts (Repeal) Act, 1921.

In *Re Fuller* (19 L.G.R., 756) farm workers employed by a landowner on his estate, one as a carter in hauling timber and other materials for repairs, and the other in repairing fences

and hedges, were held to be persons "employed in agriculture," and therefore exempt from insurance against unemployment under the Unemployment Insurance Act, 1920.

*Eastwood v. Brant* ([1921] W.C. & I. Rep., 177) was a case under the Workmen's Compensation Act, 1906, where a farm labourer was present when a motor lorry was about to deliver a load of sawdust at the farm. The wheel of the lorry stuck and the applicant voluntarily helped the lorryman to extricate it and in so doing was injured. The employer was standing by and did not interfere, but apparently acquiesced in the labourer's action. It was held that the County Court judge had evidence before him to justify his finding that the accident arose out of and in the course of the labourer's employment, and the employer was therefore liable to compensate him for the accident.

2. *Stock.* *Hinckes v. Harris* (65 Sol. J., 781) was an action for damages arising out of an attack on a cow in an auction yard by a bull which was in charge of the defendant's servants, but otherwise unsecured. Mr. Justice Bray held that there is no presumption in law that a bull will attack a cow in such circumstances, and that for the plaintiff, the owner of the cow, to succeed, it was necessary for him to prove negligence on the defendant's part in not having anticipated a probable danger. If such negligence were proved it would be no answer for the defendant to set up absence of *scienter*, i.e., knowledge of the dangerous disposition of the bull.

*Re Powell, Dodd v. Williams* (90 L.J.Ch., 161; [1921] 1 Ch., 178) raised a question, which has often caused trouble, as to the relative rights of a life tenant and remainder-man in respect of farming stock bequeathed by a testator. The testator was yearly tenant of a farm and left all his farming stock, both live and dead, to his wife for life, "in order that she may, if she so desires, carry on my farming business, she maintaining and keeping such stock at equal value during the carrying on of such business, or as near thereto as circumstances will permit," and after her death or ceasing to carry on the business, he gave the farming stock to a nephew absolutely. At the testator's death in 1894 the stock was valued at £407 12s. 6d. At the death of the widow in 1919 the stock realised £1,349 1s. 11d. Mr. Justice Russell held that in a bequest to a person for life of farming stock there is an obligation on the life-tenant to keep up the value of the stock for the benefit of the person entitled in remainder, but the obligation does not go beyond that, and that at the life-tenant's death to that extent only the stock passed under the testator's will. The estate of the nephew (who had died) was therefore only entitled to £407 12s. 6d., and the widow's estate to the amount realised beyond that, subject

in each case to payment of a proportionate part of the sale expenses and costs.

3. *Landlord and Tenant.* There have been several interesting cases during the past year under this head. In *Re Bebington's Tenancy, Bebington v. Wildman* (90 L.J.Ch., 269; [1921] 1 Ch., 559), a farm of about 89½ acres was let on a yearly tenancy. In 1919 the landlord put up the land for sale by auction, part of it being comprised in Lot 1 and the remainder in Lot 7. These lots were sold on November 18, 1919, to different purchasers. The defendant Wildman was the purchaser and had obtained a conveyance of Lot 7. On January 22, 1920, Wildman gave the tenant notice to quit Lot 7 on February 2, 1921, which was the end of the tenancy year. The purchaser of Lot 1, on January 31, 1920, gave the tenant a similar notice to quit Lot 1. By agreement between the purchasers the rent had been apportioned, but there had been no recognition by the tenant of the division of the tenancy. It was held that the notice to quit of January 22, being for part of the building only, was bad, and that it was not made good by the subsequent notice by the purchaser of the remainder of the farm, although the two purchasers might have combined to give a good notice to quit. In order to be valid a notice to quit must be one in which the tenant can act with security from the very moment at which he receives it, and the tenant could not in the present case have done so on the first notice, which was void, as being for part of the holding only and might have been so treated by the giver.

In *Freeman v. Evans* ([1922] 1 Ch., 36) the landlord wrote to inform the tenants that he must, in view of the rise in value, demand an increase of rent. As the tenants hesitated to agree to the increase, the landlord wrote again that if the tenants did not feel disposed to pay the increase he had "no alternative but to give you notice to quit," and in the same letter he enclosed a notice to quit in proper form. The tenants then agreed to pay the increase, and the landlord wrote cancelling the notice and stating that "you remain as our tenants at the increased rent." It was held that the notice to quit was a definite and unconditional one, and therefore operated to determine the old tenancy, and that a new tenancy was created by the tenants remaining on at the increased rent.

*Kirk v. Cunningham* (90 L.J.K.B., 1345; [1921] 3 K.B., 637) was a case when it was held that a tenant who has got into arrear with his rent is entitled to deduct the amount of the landlord's property tax which has been paid by him in respect of the period during which the rent has been in arrear from the next payment of rent. He may do this, not only in respect of the tax for the current financial year, but also in respect of the tax of a former year during which he has paid no rent,

it being only required that the deduction should be made from the next payment of rent.

In *Brooks v. Bloor* (90 L.J.K.B., 577) the question arose as to the validity of a notice to quit given to a yearly tenant of agricultural land before the passing of the Agricultural Land Sales (Restriction of Notices to Quit) Act, 1919. The land was glebe belonging to a vicarage, and the incumbent contracted to sell it also before the Act was passed. The sale was not complete till after the passing of the Act as the consents of the Bishop and Archbishop to the sale were required, and these had not been obtained before. It was held that the notice was not avoided by the subsequent sale, as the contract for sale had been made before the Act and was therefore unaffected by it, although certain consents had not then been obtained which were necessary before it could be completed by conveyance.

*Mitchell-Gill v. Buchan* ([1921] S.C., 390) was a Scottish case where an arbiter stated a case for the opinion of the Sheriff on a question of law arising under the Agricultural Holdings (Scotland) Act, 1908, and it was held that having done so he was bound to apply the opinion of the Sheriff or the Court of Session on appeal from him, as the case might be, and that if he disregarded the law so ascertained he was guilty of misconduct. The corresponding procedure in England would be the statement of a case by the arbitrator for the opinion of a County Court judge, and it would doubtless similarly be held in this country that the arbitrator is bound to act on the law as laid down by the County Court judge or by the Court of Appeal on the case stated, and that if he disregards it he would be liable to have his award set aside for misconduct.

In *Smith v. Primavesi* ([1921] W.N., 291) it was held that when a farmer serves notice to quit on the tenant of a cottage held by him for the purpose of putting a man in his employment therein, the certificate of the County Agricultural Committee given under Section 5, Sub-section 1 (*d*) of the Rent Restrictions Act, 1920, that the house is required by the landlord for the occupation of a person engaged on work necessary for the proper working of an agricultural holding is conclusive and avoids the necessity of producing evidence of available alternative accommodation. It is not open to the magistrates or County Court judge before whom the matter may come to refuse to accept the certificate and try the question whether the house is, in fact, required as certified.

In *Westwood v. Heywood* (90 L.J.Ch., 515; [1921] 2 Ch., 130) the owner of two farms, R. and E., of which R. was entitled to a supply of water from E., granted a tenancy from year to year of E., and it was held that there was an implied reservation of the water rights of R., and that when subsequently the tenant

of R. purchased his farm he still retained the right to the supply of water from E. farm which had also been purchased by the former tenant thereof.

4. *Produce.* *Few v. Robinson* (91 L.J.K.B., 42; [1921] 3 K.B., 504) was a case of sale of milk. A vendor who had contracted to provide milk containing not less than 3·5 per cent. by weight of milk-fat, delivered a churn of milk containing only 2·9 per cent. of fat, but it was proved that the milk was in the same condition as it came from the cow. It was held that no offence had been committed under the Sale of Food and Drugs Act, 1875, as the milk had not been adulterated either by the addition of some foreign substance or by the abstraction of one of its constituent elements. When milk is not adulterated, but is in the same condition as that in which it came from the cow, the fact that it is of a lower quality than that stipulated for does not render the delivery of it an offence under Section 6 of the Sale of Food and Drugs Act, 1875, or Section 3 of the Sale of Food and Drugs Act, 1879. The purchaser might, however, of course, have had a civil remedy for breach of the contract to supply a certain quality of milk, and all the case decided is that he had no remedy in a criminal court.

In *Vaughan v. Grindell* (9 L.J.K.B., 141; [1921] 3 K.B., 412) the respondent was charged under the Fertilisers and Feeding Stuffs Act, 1906, for having sold for use as a fertiliser of the soil six tons of superphosphate of lime without giving an invoice as required by Section 1, Sub-section 1 of the Act, stating the name of the article and the respective percentages (if any) of nitrogen, soluble phosphates, insoluble phosphates and potash contained in the article. A sample of the article had been taken by the official sampler and divided into three parts as required by Section 3, Sub-section 3 of the Act, but no part was sent to the seller as required by the same sub-section. This was held to be a fatal flaw in the proceedings, for it is a condition precedent to a prosecution under Section 6 of the Act that the prescribed portion of the sample should be sent to the seller, even though the offence charged is the omission to send an invoice and not the falsity of the invoice. The Court therefore held that the magistrates were right in refusing to convict the respondent.

*Attorney-General v. Wills United Dairies, Lim.* (19 L.G.R., 534) was a case arising under the Defence of the Realm Regulations, known popularly as D.O.R.A., and now happily for the most part at an end. On April 19, 1919, the Food Controller granted the defendants a licence to import milk purchased in Cornwall, Devon, Dorset and Somerset for the purpose of their business in Wiltshire. The price of milk in these counties had been fixed at 2d. per gallon lower than in the rest of England. The defendants' Managing Director signed an agreement at

the foot of the licence to pay the sum of 2d. per imperial gallon of milk purchased from the above-mentioned counties. The Food Controller purported to require payment of this sum of 2d. under his power to fix maximum prices for milk, his object being *bona fide* to overcome inequalities which he anticipated might arise from the differential rate imposed in the named counties. These sums of 2d. payable by the defendants mounted up to upwards of £15,000, and they refused to pay on the ground that the imposition of 2d. a gallon was a tax or charge on the subject without any legal authority. Mr. Justice Bailhache held that the imposition was not a tax, but a necessary part of the whole scheme for the regulation of prices, and was therefore authorised, but the Court of Appeal reversed his judgment, holding that the imposition of 2d. a gallon was a levy of money for or to the use of the Crown within the Bill of Rights for which the Controller had no statutory authority. They therefore held that it was not recoverable.

5. *Miscellaneous.* *Rawlings v. General Trading Co.* (90 L.J.K.B. 404; [1921] 1 K.B. 635), is an important case on the law affecting auction sales. The plaintiff and defendant attended a public auction and in order to avoid competition it was agreed that the defendant alone should bid for certain goods and that the goods if bought should be divided equally between them. The plaintiff consequently did not bid, and the goods were knocked down to the defendant who subsequently repudiated the agreement. The plaintiff then sued the defendant to recover one-half of the goods so bought or the value thereof over and above the price paid by the defendant at the auction. Mr. Justice Shearman held that at any rate when the goods sold are the property of the Government (as they were in this case) such an agreement for what is called a "knock-out" is void as being against public policy. The majority of the Court of Appeal, however, reversed this decision, holding that such an agreement is not illegal. Lord Justice Scrutton considered that it was contrary to public policy as being in restraint of trade and contrary to the public interest.

*Woodford Land & Building Co. v. Woodford Urban Council* (19 L.G.R., 559) was an interesting case relating to the compulsory acquisition of land for allotments. The plaintiff company claimed a declaration that a notice to treat for the purchase of certain lands belonging to them under the Small Holdings and Allotments Acts, 1908 and 1919, and an order for the compulsory purchase of the same lands was invalid and not binding upon the plaintiffs, and an injunction to restrain the defendants acting upon the said order and notice. It was contended, on behalf of the plaintiffs that before the defendant Council could acquire the land compulsorily they must show that they could

not acquire by agreement at a reasonable price suitable land for allotments in the district. Mr. Justice Astbury held, however, that the Council were under the Statute *prima facie* the judges of what land was suitable for allotments and whether they could acquire it at a reasonable price, and any one contesting this must clearly and definitely make out his case beyond reasonable doubt. He therefore refused the plaintiffs the relief they claimed.

*Re Todd and Yorkshire (North Riding) War Agricultural Executive Committee* (90 L.J.K.B., 228; [1921] 1 K.B., 281) was a case where a claim was made for compensation for loss occasioned through conversion of pasture into arable land under orders made under the powers conferred by the Defence of the Realm Regulations. In January and February, 1919, two orders in respect of two different farms were served upon the owner of an estate in Yorkshire requiring her to convert certain pasture fields into arable by ploughing them up and growing crops of corn and potatoes. The owner proceeded to carry out these orders, and on April 6, 1918, let the respondent into possession of the farms as yearly tenant thereof in pursuance of agreements previously made with him. The respondent on his entry paid to the owner her cost of ploughing up to the date of entry and thereafter at his own expense completed the requirements of the War Agricultural Executive Committee. In September, 1918, he, as being a person interested in the land, claimed from the Agricultural Committee compensation for loss in respect of certain of the fields in his occupation affected by the orders, and in July, 1919, further compensation for loss in respect of other fields as caused during that year, giving particulars in each case. In December, 1919, an arbitration was held under the Corn Production Act, 1917, Section 9, for the purpose of investigating his claims. In respect of one field a loss was said to have been made in 1918 and a profit in 1919. In another field a profit was made in 1918 and a loss in 1919. On a special case stated by the arbitrator the County Court Judge held (1) that the tenant was "a person interested in the land" when the claim for compensation arose within the meaning of Section 9, Sub-section 9 of the Corn Production Act, 1917, and was therefore entitled to obtain compensation for loss, although the orders had been served on the owner before he took possession of the farm; (2) that the arbitrator ought to ascertain and award separately the actual loss suffered by the tenant by reason of the ploughing up of the lands comprised in the two orders and ought not to combine all the lands comprised in the two orders; and (3) that the arbitrator ought not to take into account profit made by the respondent in 1919 in assessing loss incurred by him in 1918. On appeal

the Court of Appeal held that the County Court Judge was right on the first point and under the special circumstances of the case right on the second point, but as regards the third point, that the arbitrator having commenced the arbitration in December, 1919, ought to have taken into account the tenant's profit in 1919 in assessing the compensation for loss incurred in 1918.

*Morpeth Corporation v. Northumberland Farmers' Auction Mart Co. and Robert Donkin, Lim.* (90 L.J.Ch., 420; [1921] 2 Ch., 154) was an action to restrain disturbance of an ancient market in the town of Morpeth held on Wednesdays in every week for the sale of horses, cattle and other live stock. This ancient market belonged to the Morpeth Corporation. The defendants had recently been collaborating in holding frequent auction sales on Wednesdays of cattle and other live stock in a mart called "The Station Mart," situate quite close to the town of Morpeth and within half a mile of the site of the Corporation's market. The Corporation claimed that this amounted to a disturbance of their market and sought to restrain it. It was held that the holding of a rival market on the same day of the week as the Corporation's franchise market constituted a disturbance of the market by intendment of law without actual proof of damage, and that when once it has been established that such a rival market has in fact been held by the defendants there is a trespass on the plaintiffs' monopolistic rights against which an injunction will be granted.

*In Williams v. Morgan* (125 L.T., 543; 19 L.G.R. 409) the necessity of a licence for a locomotive steam engine used on a road came in question. By Section 9, Sub-section 1 of the Locomotives Act, 1898, every locomotive must be licensed by a County Council with an exception in favour of any "agricultural locomotive," which is defined as including "any locomotive used solely for threshing, ploughing, or any other agricultural purpose." The respondent was in charge of a heavy locomotive under steam on a highway hauling another. He had no licence. The locomotive under steam belonged to the respondent's father who had used it for twenty years solely for agriculture. The locomotive being hauled had long been used for agriculture and had been purchased by the respondent solely for agricultural purposes. It was out of repair and was being hauled to a workshop at a distant place for repair. The Justices found that the locomotive which was being hauled was an agricultural locomotive, and that the locomotive under steam was being used solely for an agricultural purpose when hauling it and dismissed the summons for using a locomotive without a licence. The King's Bench Division held that the Justices were right and that even if the respondent was not a

farmer the locomotive under steam was being used for an agricultural purpose when hauling the other to the works to be repaired and was within the exemption.

In *Dell v. Chesham Urban Council* (90 L.J.K.B., 1322; [1921] 3 K.B., 427) the Urban Council, who were a highway authority, in order to mitigate in the interests of public health and comfort the dust nuisance due to the development of motor traffic, tar-sprayed a main road which they had power to maintain and repair. The surface water flowing from the road was drained into an adjacent river through the plaintiff's watercress beds into which the Council had the right to discharge surface water. The watercress was injured by the tar acids with which the road water was charged. It was held that in the absence of proof that the damage to the plaintiff's watercress beds was the necessary consequence of the due and careful exercise by the Council of their powers in respect of the road, they were liable for the damage caused.

AUBREY J. SPENCER.

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## AGRICULTURAL STATISTICS, 1921.

TABLE I.—*Annual Average Prices, per Imperial Quarter and per Imperial Bushel, of British Corn, in England and Wales, from 1914 to 1921; with the Value of £100 of Tithe Rent-charge, based on the Septennial Average Prices.*

YEAR	Annual average price per Imperial Quarter			Annual average price per Imperial Bushel			Value of tithe rent-charge of £100 <sup>1</sup>
	Wheat	Barley	Oats	Wheat	Barley	Oats	
1914	34 11	27 2	20 11	4 4 $\frac{1}{4}$	3 4 $\frac{1}{4}$	2 7 $\frac{1}{4}$	77 1 4 $\frac{1}{4}$
1915	52 10	37 4	30 2	6 7 $\frac{1}{4}$	4 8	3 9 $\frac{1}{4}$	83 2 6 $\frac{1}{2}$
1916	58 5	53 6	33 5	7 3 $\frac{1}{4}$	6 8 $\frac{1}{4}$	4 2	92 1 0 $\frac{1}{2}$
1917	75 9	64 9	49 10	9 5 $\frac{1}{4}$	8 1	6 2 $\frac{3}{4}$	109 3 11
1918	72 10	59 0	49 4	9 1 $\frac{1}{4}$	7 4 $\frac{1}{2}$	6 2	109 3 11
1919	72 11	75 9	52 5	9 1 $\frac{1}{4}$	9 5 $\frac{1}{2}$	6 6 $\frac{1}{2}$	109 3 11
1920	80 10	89 5	56 10	10 1 $\frac{1}{2}$	11 2	7 1 $\frac{1}{2}$	109 3 11
1921	71 6	52 2	34 2	8 11 $\frac{1}{4}$	6 6 $\frac{1}{4}$	4 3 $\frac{1}{4}$	109 3 11

<sup>1</sup> The Septennial Average Price of British Corn, for the seven years ended 1885, upon which the amount of Tithe Rent-charge was calculated, was for Wheat 7s. 0d., for Barley 3s. 11 $\frac{1}{4}$ d., and for Oats 2s. 9d., per Imperial Bushel. The Tithe Act, 1918, fixes the value of Tithe Rent-charge up to the year 1925 inclusive, at the sum payable in 1918, i.e., the value based on the septennial averages for the period ended 1917.

TABLE II.—Acreage under Crops and Grass; and Number of Live Stock, as returned on June 4, 1921 and 1920.

	England		Wales	
	1921	1920	1921	1920
Total Area (excluding water) . . . . .	Acres 32,385,350		Acres 4,751,276	
Total Acreage under Crops and Grass <sup>1</sup> . . . . .	23,541,733	23,847,426	2,602,338	2,659,585
Arable Land . . . . .	10,843,512	11,180,322	774,724	839,423
Permanent Grass . . . . .	12,698,221	12,667,104	1,827,014	1,820,162
Wheat . . . . .	1,937,254	1,824,104	38,750	50,548
Barley or Bere . . . . .	1,355,869	1,587,967	79,751	99,255
Oats . . . . .	1,933,410	2,021,418	215,533	250,285
Mixed Corn . . . . .	114,588	121,560	20,896	25,917
Rye . . . . .	75,451	95,068	380	526
Beans . . . . .	243,370	255,069	1,449	2,074
Peas . . . . .	142,044	164,895	554	782
Potatoes . . . . .	531,648	519,933	20,152	27,682
Turnips and Swedes . . . . .	845,012	915,788	49,985	55,692
Mangolds . . . . .	39,415	375,927	10,348	10,578
Cabbage . . . . .	57,321	61,218	624	883
Kohl-Blabé . . . . .	9,752	10,780	130	240
Barley . . . . .	69,510	86,565	12,516	13,712
Vetches or Tares . . . . .	102,916	120,513	770	1,219
Lucerne . . . . .	49,965	44,268	209	233
Hops . . . . .	25,133	21,002	—	—
Small Fruit . . . . .	71,748	58,984	839	730
Clover, Sainfoin, and Grasses under Rotation	2,243,970	2,161,759	305,064	286,604
Other Crops . . . . .	170,347	211,987	1,850	1,996
Bar Fallow . . . . .	497,776	556,060	8,900	10,536
	No.	No.	No.	No.
Horses used for Agricultural purposes <sup>2</sup> . . .	736,478	708,845	86,261	82,091
Stallions being used for service . . . . .	5,015	5,766	1,254	1,126
Unbroken { One year and above . . . . .	190,909	192,561	34,599	35,032
Horses { Under one year . . . . .	74,545	78,168	17,724	19,130
Other Horses . . . . .	209,737	220,397	27,165	23,609
TOTAL OF HORSES . . . . .	1,217,584	1,204,740	167,003	160,988
Cows and Heifers in Milk . . . . .	1,620,044	1,587,615	246,070	240,118
Cows in Calf but not in Milk . . . . .	226,093	218,884	25,725	24,125
Heifers in Calf . . . . .	344,214	258,876	29,251	23,210
Bulls being used for service . . . . .	66,235	69,632	12,507	12,388
Other Cattle :- Two years and above . . . . .	839,961	908,297	82,813	97,533
" " One year and under two . . . . .	744,321	938,732	149,196	175,270
" " Under one year . . . . .	941,439	751,130	178,855	155,995
TOTAL OF CATTLE . . . . .	4,792,307	4,818,166	724,417	728,639
Ewes kept for Breeding . . . . .	3,979,380	3,777,237	1,367,147	1,331,215
Lambs and Ram Lambs to be used for service . . .	121,342	111,228	44,587	44,878
Other Sheep :- One year and above . . . . .	2,101,574	2,254,325	583,684	597,418
" " Under one year . . . . .	4,412,631	4,084,874	1,231,459	1,184,498
TOTAL OF SHEEP . . . . .	10,814,636	10,224,664	3,216,877	3,158,009
Sows kept for Breeding . . . . .	306,107	262,516	29,788	27,080
Boars being used for service . . . . .	22,624	18,900	1,510	2,033
Other Pigs . . . . .	1,961,373	1,532,601	154,066	150,484
TOTAL OF PIGS . . . . .	2,280,104	1,814,877	215,362	179,547

<sup>1</sup> Not including Rough Grazings.<sup>2</sup> Including Mares kept for Breeding.

TABLE III.—Total Produce, Acreage, and Yield per Acre of 1921 and 1920, with the Average

Crops	Total Produce		Acreage		Yield per Acre		Average of Ten Years
	1921	1920	1921	1920	1921	1920	
<b>WHEAT.</b>							
England . . .	Qrs.	Qrs.	(d) Acres	Acres	Bush.	Bush.	Bush.
England . . .	8,585,000	6,515,000	1,937,229	1,824,037	35.5	28.6	30.5
Wales . . .	137,000	154,000	38,750	50,048	28.3	24.3	27.5
Scotland . . .	321,000	260,000	65,191	54,355	39.4	38.2	39.6
GREAT BRITAIN . . .	9,043,000	6,929,000	2,041,170	1,923,944	35.4	28.7	30.8
Ireland . . .	181,000	175,000	42,063	50,352	35.8	27.9	36.0
UNITED KINGDOM	9,224,000	7,104,000	2,084,133	1,979,196	35.4	28.7	31.0
<b>BARLEY.</b>							
(b)							
England . . .	5,069,000	5,982,000	1,355,824	1,537,735	29.9	31.1	31.1
Wales . . .	240,000	353,000	79,751	99,225	24.1	28.5	30.1
Scotland . . .	739,000	973,000	170,718	204,368	34.6	38.1	35.6
GREAT BRITAIN . . .	6,048,000	7,308,000	(e) 1,606,231	1,841,329	30.1	31.8	31.5
Ireland . . .	714,000	965,000	175,460	206,888	32.6	34.0	41.8
UNITED KINGDOM	6,762,000	8,211,000	1,781,751	2,048,217	30.4	32.1	32.5
<b>OATS.</b>							
England . . .	9,277,000	9,846,000	1,932,236	2,016,531	38.4	39.1	39.0
Wales . . .	756,000	900,000	215,358	249,083	28.1	28.9	34.2
Scotland . . .	4,793,000	5,157,000	1,011,615	1,032,188	37.9	40.0	39.2
GREAT BRITAIN . . .	14,826,000	15,903,000	(f) 3,159,209	3,297,822	37.5	38.6	38.7
Ireland . . .	5,768,000	6,706,000	1,254,189	1,332,050	36.8	40.3	49.6
UNITED KINGDOM	20,594,000	22,609,000	4,413,398	4,629,872	37.3	39.1	41.7
<b>BEANS.</b>							
England . . .	774,000	959,000	235,002	244,456	26.3	31.1	27.2
Wales . . .	3,700	6,900	1,272	1,358	23.5	29.5	27.4
Scotland . . .	18,700	26,900	4,704	5,726	31.7	37.6	36.9
GREAT BRITAIN . . .	796,400	983,800	(g) 241,878	252,040	26.3	31.2	27.4
Ireland . . .	(i)	(i)	(i)	(i)	(i)	(i)	42.8†
UNITED KINGDOM	(i)	(i)	(i)	(i)	(i)	(i)	27.8†
<b>PEAS.</b>							
England . . .	312,000	442,000	105,362	128,744	23.7	27.6	25.0
Wales . . .	810	1,500	337	567	19.3	22.2	22.3
Scotland . . .	290	270	102	85	20.0	25.7	24.2
GREAT BRITAIN . . .	313,070	443,770	(g) 105,801	129,396	23.7	27.4	25.0
Ireland . . .	(i)	(i)	(i)	(i)	(i)	(i)	29.9†
UNITED KINGDOM	(i)	(i)	(i)	(i)	(i)	(i)	24.5†

(a) The figures for Ireland have been furnished by the Department of Agriculture and Technical Inspection for Ireland, and those for Scotland by the Board of Agriculture for Scotland. No Production Statistics are collected for the Channel Islands or the Isle of Man.

(b) Including Barley.

(c) No Vines are grown in any other part of the United Kingdom.

(d) Exclusive of a certain area (amounting in 1921 to 25 acres) the produce of which was cut green.

(e) Exclusive of a certain area (amounting in 1921 to 45 acres) the produce of which was cut green.

each of the Principal Crops in the United Kingdom (a) in  
of the Ten Years 1911-1920.

Crops—continued	Total Produce		Acreage		Yield per Acre		Average of the Ten Years 1911-1920	
	1921		1920		1921			
	Tons	Tons	Tons	Tons	Tons	Tons		
<b>POTATOES.</b>								
England . . .	2,812,000	3,053,000	521,648	516,933	5.3	5.0	6.2	
Wales . . .	146,000	168,000	26,152	27,652	5.4	3.5	5.4	
Scotland . . .	1,040,000	1,257,000	153,820	162,477	6.8	7.6	6.5	
GREAT BRITAIN .	3,998,000	4,388,000	711,620	707,092	5.6	6.2	6.2	
Ireland . . .	2,556,000	1,986,000	569,091	584,316	4.5	3.4	5.3	
UNITED KINGDOM	6,554,000	6,374,000	1,279,711	1,291,408	5.1	4.9	5.8	
<b>TURNIPS AND SWEDES.</b>								
England . . .	5,978,000	13,454,000	(A)843,161	903,829	7.1	14.6	12.3	
Wales . . .	630,000	709,000	49,995	53,622	12.6	12.8	14.5	
Scotland . . .	7,132,000	7,692,000	410,789	423,255	17.4	18.1	16.3	
GREAT BRITAIN .	13,740,000	21,855,000	1,303,985	1,413,700	10.5	15.5	13.6	
Ireland . . .	3,882,000	4,107,000	265,599	270,307	14.0	14.9	16.0	
UNITED KINGDOM	17,622,000	25,962,000	1,569,564	1,600,213	11.2	15.4	14.1	
<b>MANGOLDS.</b>								
England . . .	6,077,000	7,168,000	(A)362,700	373,699	16.8	19.2	18.8	
Wales . . .	174,000	141,000	10,356	10,579	10.8	13.3	17.1	
Scotland . . .	35,500	29,000	1,771	1,768	20.0	16.4	19.4	
GREAT BRITAIN .	6,286,500	7,336,000	374,836	386,048	16.8	18.0	18.7	
Ireland . . .	1,510,000	1,246,000	78,043	77,447	19.2	16.1	19.6	
UNITED KINGDOM	7,796,500	8,582,000	453,479	463,493	17.2	18.5	18.8	
<b>HAY from CLOVER, SAINFOIN, &amp;c.</b>								
England . . .	1,956,000	2,327,000	1,568,554	1,486,149	24.9	31.3	28.7	
Wales . . .	188,000	257,000	189,982	188,293	26.0	27.3	25.3	
Scotland . . .	581,000	694,000	410,556	423,256	28.3	32.6	30.9	
GREAT BRITAIN .	2,725,000	3,278,000	2,168,082	2,009,608	25.1	31.2	28.9	
Ireland . . .	(i)	(i)	(i)	(i)	(i)	(i)	36.2†	
UNITED KINGDOM	(i)	(i)	(i)	(i)	(i)	(i)	31.5†	
<b>HAY from PERMANENT GRASS.</b>								
England . . .	2,840,000	5,071,000	3,568,978	3,902,520	15.9	26.0	22.0	
Wales . . .	355,000	556,000	483,472	492,428	14.7	22.6	19.8	
Scotland . . .	205,000	245,000	112,984	152,164	23.7	32.6	30.2	
GREAT BRITAIN .	3,400,000	5,875,000	4,195,414	4,547,112	16.2	25.8	22.0	
Ireland . . .	(i)	(i)	(i)	(i)	(i)	(i)	41.1†	
UNITED KINGDOM	(i)	(i)	(i)	(i)	(i)	(i)	26.8†	
<b>HOPS.</b>								
England (e)	224,000	281,000	25,183	21,002	Cwt. 8.9	Cwt. 13.4	Cwt. 10.5	

(f) Exclusive of a certain area (amounting in 1921 to 1,349 acres) the produce of which was cut green.

(g) Exclusive of a certain area (amounting in 1921 to 9,645 acres of beans and 38,899 acres of peas) the produce of which was cut or picked green.

(h) Exclusive of a certain area (amounting in 1921 to 1,634 acres of turnips and swedes, and 1,708 acres of mangolds) on which the crops were grown for the production of seed.

(i) Figures for Ireland not available. The total acreage of hay (from clover, etc., and permanent grass) in Ireland in 1921 was 2,369,700 acres, and the total production 3,257,62 tons.

† Average for 7 years only.

TABLE IV.—*Hops:—Total Produce, Acreage, and Yield per Acre, in 1921 and 1920, in each County of England in which Hops were grown; and the Average Yield of the Ten Years 1911–1920.*

COUNTIES	Total produce		Acreage		Yield per acre		Average of the Ten years 1911–20
	1921	1920	1921	1920	1921	1920	
TOTAL FOR ENGLAND	Cwt. 224,000	Cwt. 281,000	Acres 25,133	Acres 21,002	Cwt. 8·9	Cwt. 13·4	Cwt. 10·5
East	39,000	49,000	4,005	3,358	9·6	15·2	11·5
Mid.	52,000	72,000	5,414	4,520	9·7	15·9	12·2
Weald	32,000	35,000	6,634	5,710	7·9	14·8	11·1
Kent							
Total—Kent	143,000	206,000	16,053	13,488	8·9	15·3	11·6
Hampshire	9,000	10,000	1,043	838	8·4	11·8	10·1
Surrey	1,500	2,000	196	172	7·4	12·7	8·3
Sussex, East	12,000	25,000	2,188	1,222	5·6	14·6	10·4
West	730	1,000	83	66	8·8	14·7	—
Gloucester	—	8	—	10	4	0·8	3·3†
Hereford	33,000	23,000	3,522	2,003	9·5	7·7	7·7
Salop	750	120	73	52	10·2	2·3	6·6
Worcester	24,000	14,000	1,963	1,667	12·1	8·3	8·2
Berkshire	—	6	—	4	—	1·5	—

† Average for 7 years only.

## NOTES, COMMUNICATIONS AND REVIEWS.

**Demonstration of Drainage Machines at Harmston, near Lincoln.** At this demonstration seventeen machines, nearly all of them of British manufacture, were seen at work. An exhaustive trial was, of course, impossible, nor are details of costs available, but the following notes convey a few impressions and observations recorded during the demonstration.

1. *Messrs. Ruston & Hornsby's Drag Line Excavator.*—A self-contained steam model mounted on special caterpillar tracks, fitted with a scoop. The fault in this machine when used for cleansing rivers and drains lies in the fact that it will not form the batters of the channels and the shape of the scoop is not the best for the purpose for which it is intended. We understand that experiments are to be made with a view to an improvement in this direction which may alter the working somewhat. The caterpillar track is a great improvement, as it is not so liable to damage the banks as an ordinary traction engine. The makers are also considering the question of mounting the machine on floating pontoons.

2. *Messrs. Priestman's Grab Dredger*.—A useful tool on small dykes and streams to take out the centre silt. The great fault with machines of this type is that they are not suitable for grading rivers or drains, insomuch as the Grab is liable to leave holes or depressions in the beds, making an uneven bottom, and so militating against the efficient uttering of water.

3. *Messrs. Gwynne's Centrifugal Pumps*.—One pump reduces the deposit in the channel to be cleansed to liquid mud while the other lifts it on to the bank. This system cannot, of course, form batters, and it would be necessary to have a cradle or some other obstruction to prevent the mud from becoming out of hand after it was deposited.

4. *Fox's Scoop*.—Used in conjunction with an ordinary steam ploughing set. It is an out-of-date type of scoop in use about twenty years ago, since which time many improvements have been made, but with intelligent use it can be made to form batters to the banks or cuttings of rivers and drains during cleansing operations.

5. *Messrs. Roddis, Ltd. Scoops*.—This is only applicable to the making of ditches, etc., and leaves the work in a somewhat rough condition. Actuated by ordinary steam ploughing engines.

6. *H. B. Wells. Ditching, Trenching, and Mole Draining*.—This machine is for two purposes, ditching and trenching, and mole draining. It is drawn by an internal combustion tractor, but the writer did not see it at work.

7. *The "Buckeye" Tractor Ditcher*.—This machine is also for excavating field drains and ditches and, while being somewhat complicated, did its work better than the Nordby machine, and it is capable of grading the drain. It appeared to be the best machine shown and in principle more likely to be made into an economical and practical implement.

8. *The "Nordby" Ditch Digger*.—This is an ingenious machine having two digging arms for loosening the soil, which is then picked up and deposited on the sides of the trench by buckets mounted on an endless chain. We considered it too complicated in its working parts and too light in construction. It did its work fairly well, but will not grade trenches.

9. *Land Drainage Excavator Co., Ltd. (Spalding). The "Revolt" Excavator*.—A trenching machine drawn by an agricultural tractor and operated by two men. It seems to require more attention, as judged by the number of men needed to work it, than the other machines.

10. *Thos. Pate. Plough for Making Field Drains*.—The implement was exhibited in a crude state, but if properly made might be a very useful tool.

11A. *Messrs. John Fowler & Co., Ltd. Mole Draining Ploughs*.—The ordinary type of mole plough actuated by steam

ploughing engines. In the soil which this machine was working the results were quite satisfactory, but mole ploughs are not useful on light lands.

11B. *F. A. Standen. Internal Combustion Power Cable Set.*—This was a machine for mole draining actuated by an internal combustion engine, but it did not create a very favourable impression.

13. *Combined Subsoil and Light Mole Plough.*—This appeared to be a useful tool and its work on strong land should be worth watching.

14. *The "Borsig" Heavy Fuel Internal Combustion Engine.*—This was seen at work on mole ploughing and ordinary ploughing and seemed to be a substantial machine capable of dealing with work of a heavy nature. It appeared to be of a sound design.

C. W. TINDALL.

**English Farming Past and Present.** The Right Hon. Lord Ernle. 3rd edition, pp. xvi. + 504. (Longmans, Green & Co. 12s. 6d. net.)

This history of the development of English Agriculture first appeared in 1912 and was reviewed in the Society's *Journal* for that year (Vol. 73, p. 369). In the latest edition the author has included a chapter of great historical interest on the agricultural policy of the country during the war. It is not necessary to repeat what has already been said about the original work. Lord Ernle's profound knowledge of his subject, combined with his delightful literary style, has produced a book which can be read with pleasure and profit by all. In these days particularly, when the agricultural outlook is so uncertain, much good would accrue to those who are concerned with the agricultural policy of the country if they were to study those chapters dealing with the great agricultural depression and the lessons which the author draws from them.

**An Agricultural Atlas of Wales.** Prepared by J. Pryse Howell, for the Institute for Research in Agricultural Economics, Oxford, and published by direction of the Ministry of Agriculture and Fisheries by the Ordnance Survey, Southampton, 1921. 5s.

This Atlas consists of a series of maps showing by means of dots the distribution of crops and livestock in the Principality. There are twenty-six maps in all. Of these, twenty-three are distributional maps, and a relief map, a rainfall map and a geological map, on loose leaves, complete the Atlas. The distributional maps are bound together and are printed on transparent paper, each map exhibiting one particular distribu-

tion—for example, wheat, or horses—and it is accompanied by a text giving the acreage of the crop, or of the number of livestock, for each county. The three loose maps were prepared by the Ordnance Survey and are for the purpose of estimating the influence of altitude, rainfall or geological formation on the distribution of crops and livestock.

The whole set of maps is published on the 1/1,000,000 scale, and those showing the distribution of crops and livestock are based upon the Agricultural Returns for the year 1918.

In Wales, agriculture is largely dominated by the presence of much mountain land and a high rainfall, and the influence of such things as soils, transport and markets are probably less felt in the development of farming practice here than in many areas of equal size in England. The maps, however, do reveal certain facts, and the following may be mentioned to illustrate the use of the Atlas. With the exception of the mountainous areas, the geological formation does not determine the distribution nor the density of either crops or livestock. The arable districts are generally confined to those areas under 600 feet. Wheat seems to follow the arable land fairly uniformly, but a slight special concentration is to be observed in the south of Glamorgan and Monmouth, parts of the Severn valley, in Montgomeryshire and in the south-east of Denbighshire. In the north-east of Anglesey there is hardly any wheat grown, and very little in Carnarvonshire. Barley, again, occurs wherever there is arable land, but its cultivation is more pronounced on the fine soils of the coastal regions (Carnarvon, Cardigan and Pembroke). Oats are more widely distributed and are grown in many parts where the other cereals do not flourish. Beans and peas are not cultivated to any great extent. Such beans as are grown are cultivated on the northern borders of Flint and Denbigh and in some of the eastern parts of Montgomeryshire, while the cultivation of peas is mainly confined to some parts of the Severn Valley. Potatoes have a fairly wide distribution and there appears to be a certain correlation between potatoes and pigs. Rotation grasses, as may be expected, follow the arable land closely, and the same may be said of turnips and swedes. The maps having been compiled from returns taken in June, the concentration of Sheep appears on the high land. Figures collected in the winter would show a considerable movement towards the middle and lowland farms. The distribution of Dairy Cattle is generally that of the arable land, but there is a slight concentration to be seen in the counties of Pembroke, Carmarthen and Glamorgan along the main line of the Great Western Railway, where the development of milk-production for supplying the industrial areas of South Wales has become a feature of the farming practice.

An Atlas of this kind should have a considerable value, not only in connection with the study and teaching of Agriculture, but also for educational purposes in Elementary and Secondary Schools. It will also prove a valuable guide to the investigator desirous of studying any particular branch of the agricultural industry, as it will assist him in localising the distribution of any food product or special feature of farming practice in which he is interested. At present very little is known as to the extent to which the various systems of farming are governed by surface geology, rainfall, altitude, or economic factors, and the Atlas will do much to facilitate research work in these directions. It has been beautifully printed by the Ordnance Survey, and the price is very moderate. The hope may be expressed that a similar Atlas showing the distribution of crops and stock in England will follow in due course.

**Fruit Farming : Practical and Scientific for Commercial  
Fruit Growers and Others.** By Cecil H. Hooper, F.S.I.  
2nd Edition. (The Lockwood Press, London.)

The undoubted attraction which fruit farming as a means of livelihood has offered since the war to many who have hitherto possessed little knowledge of the subject has led to numerous inquiries for reference works on the subject suitable for the novice. While there is perhaps no great wealth of English literature relating to fruit, the amateur is fairly well provided for. He has no recognised standard text-book on pomology for reference written primarily to apply to conditions in this country and modern enough to include the considerable advances in our knowledge of the subject made during the last quarter of a century ; but the older works, in combination with recent publications dealing with the results of research in horticultural science, can teach him how to grow healthy and fertile trees. On the other hand, for the man who desires to make his living from fruit growing there has been a marked lack of information of the kind needed available in book form, and the appearance of the first edition of the volume under review was of interest on that account. The second edition now issued, some ten years after the first, is a revised, extended and more fully illustrated form of its predecessor.

In title there is a suggestion that the work is designed to fill the gap indicated, but the author in his preface mentions that it had its origin in a series of articles contributed to the *Fruit, Flower, and Vegetable Trades' Journal*, and by doing so may intend to emphasise its composite character. It is indeed a symposium of brief papers dealing with various aspects of fruit farming. The contribution of individual short chapters by various well-known experts in different branches of the subject,

however useful in providing reliable first-hand information, tends nevertheless to destroy the unity of method and treatment which is to be desired in a volume intended to serve as a text-book.

That method having been adopted, the author is to be congratulated on having enlisted the co-operation of so many authorities in the preparation of particular sections. The volume would doubtless have gained greatly in value had it been possible to grant them more space in which to deal with their subjects.

Notwithstanding any deficiencies in these respects, there is to be found in its pages a mass of information of interest and use to the prospective fruit farmer which is generally sound, up-to-date, and not to be found under one cover elsewhere.

The scope of the work is ambitious. In addition to individual articles dealing with the various kinds of fruit, there are chapters devoted to such indispensable subjects as the training required by a fruit farmer, the financial aspect of fruit farming, soil, manurial and cultivation questions, the laying out of fruit plantations, propagation, grafting and pruning, diseases and pests and their treatment, and grading, packing and marketing. Space is also found for consideration of some of the legal points peculiar to fruit farming, and other subjects of interest such as birds in relation to fruit growing, comparisons of English and Australian systems, historical surveys of fruit culture in this country and Canada, life histories of many of the better known varieties of apples, pears, plums and cherries, pollination problems and fruit breeding. There are fifty chapters in all, each devoted to a particular aspect of the subject. Since the total number of pages is approximately only two hundred, it will be gathered that there is little chance of giving adequate treatment to most. The chapter dealing with plum and damson culture, for example, is condensed to four pages only, and even that on the apple has no more than eight pages allotted.

With space so precious one might fairly expect that due regard would be paid to the importance and arrangement of the matter included. It is in this respect that one of the main weaknesses of the book is apparent. Many points of relative triviality are included and unnecessary repetition occurs several times. Thus in the early part of the chapter on "The Apple" there is a reference to the Blenheim Orange variety which is repeated towards the end of that chapter in almost the same form. A not inconsiderable part of the chapter is devoted to apple pests and spraying, notwithstanding that in a later part of the book the same subjects receive special attention. A list of varieties showing the order of flowering is also given, while the same point is treated in more extended form subsequently,

when however the order is varied materially. In the one case, for example, Bramley's seedling is referred to as coming among the mid-season varieties and in the other is classed with the latests.

Parts of the book show evidence of hurried preparation and misprints are not infrequent. In the chapter on Fungoid Diseases there are many mistakes of this kind, both in the generic and specific names of the organisms referred to. It is rather surprising to find the now discredited idea that the apple canker fungus infects young twigs through the buds is affirmed in view of Wiltshire's recent work which has demonstrated that these infections occur through the leaf scars. Again, the question of reversion in black currants is twice mentioned, but on neither occasion is any indication given of even the symptoms of this most serious of black currant diseases. There is also a mistake in the index as to the page number of one of these references.

B. T. B.

## THE DERBY SHOW, 1921.

*President : MR. R. M. GEEAVES.*

THE exhibition which took place at Osmaston Park from Tuesday, June 28, to Saturday, July 2, was the eightieth annual event of its kind organised by the Royal Agricultural Society ; and Derby—like Newcastle-upon-Tyne—has now been the place of meeting no less than four times.

In the table below some particulars concerning these four Derby Shows are given for purposes of comparison :—

Year.	President of the Year.	Imple- ments &c., entered.	Entries of Live Stock.	Number of persons paying for admission.	Financial Result + = Profit - = Loss.
1843	4th Earl of Hardwicke	508	730	No record	—£3,164
1881	Mr. William Wells.	5,960	1,229	127,996	+\$1,528
1906	Mr. F. S. W. Cornwallis	4,772*	2,319	119,143	+\$2,058
1921	Mr. R. M. Geeaves	4,639	3,613	125,828	+\$9,621

\* Since 1898 Special Shedding exhibits have been grouped and do not bear separate numbers.

In view of the visit of the R.A.S.E., the Derbyshire Agricultural and Horticultural Society arranged to forego their own County show for the year, as they did in 1906, and their members were granted special facilities in connection with the visit of the National Society.

The prolonged stoppage of work in the mines created a good deal of uncertainty as to what facilities the railway com-

panies would be able to offer ; but, in spite of the difficulties, the various companies concerned dealt most expeditiously with the several thousands of exhibits of all kinds ; with the result that everything was in order at the time appointed for the opening of the Yard to the public. In this connection the special sidings and dock accommodation provided by the Midland Railway Company adjoining the showground were invaluable.

In consequence of the coal shortage and the limited number of trains running on all lines, the facilities for passenger traffic were of necessity very restricted, and much larger numbers than formerly came to the show by motor-car and char-à-banc, the garage accommodation throughout the greater part of the week being taxed to its utmost capacity.

Outbreaks of foot-and-mouth disease in Derbyshire a few weeks before the opening seriously threatened the success of the show, and gave rise to considerable anxiety. But prompt and decisive action by the Ministry of Agriculture in stopping all movement of animals over a large area for the first two weeks of June saved the situation and made possible the exhibition of stock at Derby. Fear of infection, however, was probably responsible for a number of animals that had been entered being kept at home.

The Scottish Board of Agriculture had in force at the time of the Show certain regulations stipulating that animals entering England for show and other purposes must remain for a period of fourteen days in this country before being allowed to return. The Ministry of Agriculture in London were successful in securing the suspension of the Regulation, but rather too late to ensure a large entry of stock from across the border.

An excellent site, a little over a mile from the town, was secured at Osmaston Park, where the shows of 1881 and 1906 were held. The Midland Railway Company generously provided the greater part of the land required. Between 130 and 140 acres were covered on the present occasion, or about half as much again as was needed fifteen years ago. The main entrance and administrative office buildings were erected in London Road, along which thoroughfare there was a frequent service of tram-cars ; and, for the convenience of visitors coming by way of Osmaston Road, there was a second public entrance at the other end of the ground.

Towards the prize fund the different breed societies, as on former occasions, made liberal contributions. Generous support was also given by the Derby Local Committee. The value of the prizes this year, as will be seen from the summarised statement, was almost double that of the prizes offered in 1906. The classification, too, was more comprehensive, and the entries in all sections were greater.

**COMPARATIVE STATEMENT OF ENTRIES, &c.,  
AT TWO SHOWS HELD AT DERBY IN 1906 AND 1921.**

HORSES AND CATTLE.	1906		1921		GOATS, SHEEP, PIGS, POULTRY, RABBITS, PRODUCE.		1906		1921	
	Classes	Entries	Classes	Entries	Prizes	Entries	Classes	Entries	Classes	Entries
	<b>HORSES :—</b>									
<i>Prizes</i>										
Shires . . . . .	10	142	11	135	£2,070	24,004 10s.	—	—	14	24
Clydesdales . . . . .	6	28	9	61						
Suffolks . . . . .	6	29	10	72						
Percherons . . . . .	—	—	6	59						
Agricultural Horses . . . . .	3	15	—	—						
Hunters—										
Breeding Classes . . . . .	8	64	10	63						
Riding Classes . . . . .	6	52	7	48						
Polo and Riding Ponies . . . . .										
Breeding Classes . . . . .	5	35	5	20						
Hack and Riding Ponies . . . . .	2	8	4	9						
Arabs . . . . .	—	—	2	9						
Cleveland Bays . . . . .	3	21	1	1						
Coch Horses . . . . .	3	12	1	1						
Hackneys . . . . .	12	76	6	29						
Hackney Ponies . . . . .	5	21	2	7						
Welsh Ponies . . . . .	—	—	3	12						
Shetland Ponies . . . . .	2	9	2	9						
Mountain, &c. . . . .										
Ponies . . . . .	2	5	—	—						
Driving Classes . . . . .	11	89	13	52						
Jumping . . . . .	5	56	4	88						
Assees . . . . .	2	5	—	—						
Total for HORSES	91	667	96	689	£2,323	£4,323 15s.	—	81	580	110
<b>CATTLE :—</b>										
<i>Prizes</i>										
Shorthorn . . . . .	—	299	10	201						
Dairy Shorthorn . . . . .	3	20	9	150						
Lincolnshire Red Shorthorn . . . . .	—	—	32	7						
Horned . . . . .	6	59	8	101						
Devon . . . . .	6	27	6	31						
South Devon . . . . .	2	9	5	23						
Longhorn . . . . .	4	20	3	10						
Sussex . . . . .	6	39	5	35						
Welsh . . . . .	4	16	5	41						
Red Poll . . . . .	6	49	6	101						
Aberdeen-Angus . . . . .	6	76	6	54						
Galloway . . . . .	4	24	5	15						
Highshire . . . . .	2	2	—	—						
Park Cattle . . . . .	2	3	3	9						
British Friesian . . . . .	—	—	—	—	113					
Jersey . . . . .	6	127	7	103						
Guernsey . . . . .	6	44	5	69						
Kerry . . . . .	3	18	4	27						
Dexter . . . . .	3	41	4	54						
Blue Albion . . . . .	—	—	3	24						
Milk Yield . . . . .	11	92	13	142						
Butter Test . . . . .	2	37	2	96						
Total for CATTLE	96	1,039	125	1,492	—			24	266	67
<b>LIVE STOCK, POULTRY, and PRODUCE.</b>										
1906 . . . . .										
Grand Totals for	447	Classes	3,888	Entries	—	£6,689 17s.				
1921 . . . . .	657	Classes	5,768	Entries	—	£13,379 12s.				
* Including £176 for Competitions.										
* Including £300 for Horticultural Exhibition.										
Prizes Entries . . . . .										
GOATS :—	—	—	—	—	—	—				
<i>Prizes</i> Entries . . . . .										
<b>SHEEP :—</b>										
<i>Prizes</i> Entries . . . . .										
Prizes Entries . . . . .	—	—	—	—	£1,400	—				
Oxford Down . . . . .	4	30	5	15						
Shropshire . . . . .	7	104	6	6						
Southdown . . . . .	6	71	5	5						
Hampshire Down . . . . .	5	54	6	6						
Suffolk . . . . .	6	34	3	3						
Dorset Down . . . . .	—	22	—	—						
Dorset Horn . . . . .	4	13	5	5						
Ryeland . . . . .	3	—	—	—						
Wensleydale Hill (Wales) . . . . .	6	54	6	6						
Lincoln . . . . .	4	27	5	5						
Leicester . . . . .	4	13	4	4						
Border Leicester . . . . .	—	—	11	11						
Wensleydale . . . . .	4	5	3	3						
Lonk . . . . .	2	5	3	3						
Derbyshire Gritstone . . . . .	—	—	—	—						
Kent or Romney . . . . .	5	64	6	6						
Marsh . . . . .	4	15	4	4						
Cotswold . . . . .	3	10	2	2						
Devon Long Wool . . . . .	2	8	4	4						
South Devon . . . . .	2	4	4	4						
Dartmoor . . . . .	—	—	5	5						
Exmoor Horn . . . . .	2	5	5	5						
Cheviot . . . . .	—	—	5	5						
Herdwick . . . . .	2	16	12	12						
Welsh Mountain . . . . .	2	—	3	3						
Black-faced Mountain . . . . .	—	—	—	—						
Swaledale Dales . . . . .	—	—	5	5						
Bred . . . . .	—	—	—	—						
Total for SHEEP	81	580	110	110	£479	—	£1,400	24	266	67
<b>PIGS :—</b>										
<i>Prizes</i> Entries . . . . .										
Large White . . . . .	5	66	8	8						
Middle White . . . . .	5	33	8	8						
Wiltshire . . . . .	5	36	6	6						
Berkshire . . . . .	5	69	8	8						
Large Black . . . . .	4	62	6	6						
Gloucestershire Old Spots . . . . .	—	—	8	8						
Lincolnshire Curly Coated . . . . .	—	—	5	5						
Cumberland . . . . .	—	—	6	6						
Wessex Saddleback . . . . .	—	—	6	6						
Essex . . . . .	—	—	—	—						
Total for PIGS	24	266	67	67	£479	—	£1,400	24	266	67
Total for STOCK	292	2,552	412	412	2,552	412	2,552	292	2,552	412
<b>POULTRY :—</b>										
<i>Prizes</i> Entries . . . . .										
Prizes Entries . . . . .	—	—	£207	£207	—	—	—			
Entries . . . . .	107	811	151	151	—	—	—			
<b>RABBITS :—</b>										
<i>Prizes</i> Entries . . . . .										
Prizes Entries . . . . .	—	—	—	—	—	—	—			
Entries . . . . .	48	525	47	47	—	—	—			
<b>PRODUCE :—</b>										
<i>Prizes</i> Entries . . . . .										
Prizes Entries . . . . .	—	—	£233	£233	—	—	—			
Entries . . . . .	48	525	47	47	—	—	—			

Grand Totals for  
LIVE STOCK, POULTRY, and PRODUCE.

\* Including £176 for Competitions.

\* Including £300 for Horticultural Exhibition.

The heavy breeds of horses were well represented, but in the section for light horses the entries were disappointing. For all-round quality as well as numbers the exhibits in the cattle classes were remarkable. This year Blue Albions, a breed specially identified with the Peak district of Derbyshire, were seen in the Royal showyard for the first time. Sheep made a very creditable and comprehensive show as a whole, though of the twenty-seven breeds classified no fewer than eight failed to attract entries reaching double figures. Pigs, representing ten breeds with 902 entries in sixty-seven classes, put up another new record.

STATEMENT OF ENTRIES FOR THE 1921 SHOW, COMPARED WITH PREVIOUS YEARS.

*Entries of Live Stock, Poultry and Produce.*

	Derby, 1921	Darling- ton, 1920	Cardif, 1919	Man- chester, 1916	Notting- ham, 1915	Shrews- bury, 1914	Bristol, 1913	Don- caster, 1912	Derby, 1906
Horses . . . . .	1,601	1,714	1,569	1,518	1,500	1,819	1,584	1,773	1,563
Cattle . . . . .	11,254	11,175	1,867	1,803	1,862	1,272	1,138	1,089	4,926
Goats . . . . .	168	1,143	91	92	—	—	—	—	—
Sheep . . . . .	788	730	588	607	575	588	736	734	564
Pigs . . . . .	902	692	389	321	360	417	394	426	266
 Total. . . . .	 3,613	 3,403	 2,502	 2,341	 2,297	 3,394	 2,852	 3,022	 2,919
 Poultry. . . . .	 1,219	 1,476	 1,883	 1,519	 1,286	 1,373	 1,436	 1,242	 811
 Rabbits. . . . .	 288	 390	 278	 —	 —	 —	 —	 —	 —
 Produce . . . . .	 322	 475	 387	 565	 461	 893	 685	 559	 523

<sup>1</sup> Exclusive of Double Entries.

<sup>2</sup> Exhibition of Cattle, Sheep and Pigs prohibited by order of Board of Agriculture.

*Shedding in Implement Yard (in Feet).*

Description of Shedding	Derby, 1921	Darling- ton, 1920	Cardif, 1919	Man- chester, 1916	Notting- ham, 1915	Shrews- bury, 1914	Bristol, 1913	Don- caster, 1912	Derby, 1906
Ordinary . . . . .	4,595	5,410	4,540	3,300	4,885	6,610	6,870	7,050	7,818
Machinery . . . . .	5,560	5,710	4,200	1,290	2,935	3,405	2,665	3,125	2,520
Special . . . . . (Seeds, Models, etc.)	3,835	3,374	2,469	2,480	2,884	3,473	3,689	3,363	2,692
Total. . . . . (Exclusive of open space)	13,990	14,494	11,209	7,070	10,704	13,488	14,224	13,588	18,030
No. of Stands . . .	508	471	371	239	339	439	513	442	424

Intense heat prevailed during the time that animals were in course of transit to the show, and this was responsible for twenty-two casualties amongst pigs entered. Six, which on arrival were in a moribund condition, succumbed shortly afterwards in the showyard. Information was also received of the deaths on the journey of sixteen other pigs—fourteen coming by rail, and two that were being conveyed by motor lorry.

During the whole period of the show, the weather, for an open-air function like the "Royal," was all that could be desired, with an abundance of sunshine and a total absence of rain.

Tuesday, the opening day, was as usual entirely given over to the business of judging.

On Wednesday, the show was honoured by a visit from His Majesty the King, who, accompanied by Col. Clive Wigram and Lieut.-Col. Erskine, arrived by special train from Newmarket shortly before noon. In deference to His Majesty's wishes, no special public expenditure was incurred in decorations on the line of route to the showyard.

The royal procession, on reaching the main entrance in London Road, was met by the Honorary Director, Sir Gilbert Greenall, on horseback, and conducted through the showyard to the Royal Pavilion, where H.M. the King was received by the President (Mr. R. M. Greaves) and other members of the Council. Members of the Corps of Guards Old Comrades and the Derbyshire Imperial Veterans' Association, who were drawn up in front of the Pavilion, having been inspected by His Majesty, a tour of the Implement Yard was made. The Forestry Exhibition and the pavilions of the Governments of Western Australia and the Union of South Africa were also visited.

His Majesty honoured the President with his presence at luncheon in the Royal Pavilion, the guests including members of the Council and official representatives of the County and Borough of Derby.

After luncheon, His Majesty visited the Horticultural section and spent some time in the tents examining the exhibits. The King then drove through the stockyard to see the cattle, sheep and pigs, passing, on the way, the working dairy; and, later, proceeded to the Royal box in the Grand Stand at the Ring. Here His Majesty watched the parade of heavy horses, the judging of four-in-hand teams, and the horse-jumping. The Royal party left the showyard shortly after four o'clock.

A letter was next day received by the President from Col. Clive Wigram, thanking all concerned for the excellent arrangements made in connection with the visit. "What greatly impressed His Majesty"—wrote Col. Wigram—"was the magnitude of the show compared with the last one held at Derby

in 1906. It is seven years since the King was able to attend a Royal Show, and His Majesty was gratified to see the remarkable advance that has been made in the various types of machinery and implements and also in the application of science to agriculture. The steady improvement in the quality of the live stock and produce classes, combined with good entries, cannot fail to be encouraging to the members of the Society. The King specially wishes you to convey to the untiring Honorary Director, Sir Gilbert Greenall, his warm congratulations on the success of his efforts.

"In conclusion, I am to assure you that His Majesty deeply appreciated the friendly welcome with which he was received by all present in the showyard."

In honour of the Royal visit, the Mayor of Derby entertained a party of members of the Council and of the Local Committee to dinner on the evening of Wednesday.

The General Meeting of Governors and Members took place in the showyard on Thursday, when votes of thanks were accorded to the Mayor and Corporation and to the Derby Local Committee for their exertions in connection with the show. Thanks were also expressed to the Railway Companies for the efficient and expeditious manner in which the exhibits of all kinds had been handled by them, special reference being made to the officials of the Midland Railway Co.

On the recommendation of the Special Committee appointed after the show at Darlington, the prices of admission for the five days at Derby were increased respectively to 10s., 5s., 5s., 3s., and 2s., and the charge for a season ticket to £1. Detailed figures of the admissions at different hours during the several days are given in tabular form, together with a statement comparing this year's daily numbers with those of the preceding six shows, and the last Derby show of 1906.

Visitors from abroad included a number of agricultural students from Denmark, members of the Agricultural Society of Friesland, and a party of Boy Farmers from the United States of America, the Premiers and High Commissioners of the Dominion of Canada and the Union of South Africa.

Certain circumstances connected with this year's gathering would appear to be almost a repetition of occurrences in 1881, for it is reported that the Derby Show of that year was "favoured with almost uninterrupted sunshine, not a drop of rain falling from the opening morning to the end of the show." Forty years ago, too, foot-and-mouth disease occurred in the district a few weeks before the show, as it did this year.

Notwithstanding the adverse circumstances which overshadowed the final arrangements for the show, the Society's fourth visit to Derby was a success in every way, particularly

184 *Miscellaneous Implements Exhibited at Derby Show.*

*Admissions by Payment at Derby, 1921.*

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	Day's total
Tuesday (10s.) . . .	1,551	3,071	3,698	3,781	3,791
Wednesday (5s.) . . .	14,395	27,985	33,091	33,496	33,979
Thursday (5s.) . . .	11,592	28,167	32,462	33,804	33,931
Friday (3s.) . . .	11,927	25,444	30,387	31,656	31,777
Saturday (2s.) . . .	8,467	15,156	20,564	22,203	22,350
Total Admissions . . .					125,828

*Total daily admissions at the 1921 Show, compared with the six previous Shows and the Derby Show of 1906.*

Day of Show	Derby, 1921	Dar- ling-ton, 1920	Car- diff, 1919	Man- ches- ter, 1918	Notting- ham, 1915	Shrews- bury, 1914	Bristol, 1913	Derby, 1906
First . . .	3,791	11,397	8,466	4,067	1,641	2,166	1,769	2,752
Second . . .	33,570	51,479	45,098	29,145	12,321	12,566	21,632	25,666
Third . . .	33,831	52,626	68,838	38,938	30,798	19,317	31,155	44,670
Fourth . . .	31,777	40,389	36,292	40,874	26,034	39,397	78,702	46,655
Fifth . . .	22,350	27,001	33,002	38,178	33,089	14,357	45,890	—
	125,828	182,892	101,804	149,197	103,883	87,803	178,148	119,141

from the financial aspect, the result being a surplus of receipts over expenditure amounting to £9,621.

I have to express my thanks to the Hon. Director for his invaluable advice and kindly "breaking in" at this my first Royal Show, and to the whole of the official staff for their loyalty and assistance.

T. B. TURNER.

16 Bedford Square,  
London, W.C.1.

**MISCELLANEOUS IMPLEMENTS EXHIBITED  
AT DERBY SHOW.**

THE entries this year for competition for the Society's medal for new implements numbered 64 as against 73 last year and 52 in 1914. Of these 8 did not appear, or withdrew, leaving 56 to be judged.

The judges were able to award six medals, but it cannot be said that there were any epoch-making inventions.

Taking them in catalogue order they are as follows:—

Stand 47, No. 850. J. & F. Howard, Ltd., Bedford. *Two-furrow Tractor Plough with Reversible Digging Bodies, Patent Draw-bar and Improved Lifting Gear.*

This is a thoroughly well-constructed machine, the frame is riveted up instead of being bolted, the substantial vertical carriers of the plough bodies are recessed on each side at the top to fit either side of the frame, a bolt passing through the two so that the plough can be fixed either side thus varying the width between the furrows. There are no loose parts, the self-lifting mechanism exhibits nothing specially new except that it is placed directly over its work without any overhang. The draw-bar attachment can be moved from side to side and then fixed by means of a lever and catch easily controlled by the driver of the tractor. Altogether a well-made substantial engineer's job.

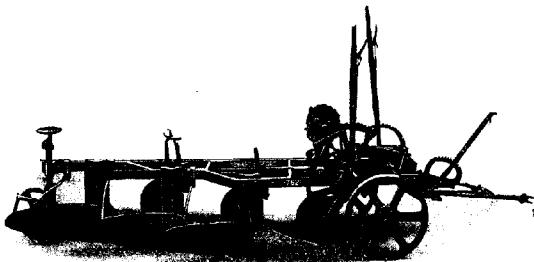


FIG. 1. HOWARD'S TRACTOR PLOUGH.

Stand 50, No. 948. W. N. Nicholson & Sons, Ltd., Trent Iron Works, Newark-on-Trent. *Detachable "Duplex" Self-lifting Gear for Harrows for raising back or front tines alternately or at the same time, fitted to a Motor-tractor Harrow covering 13 ft. wide and 5 ft. deep.*

This is one of those simple things that makes one inclined to say, "Why did not I think of that?"

The harrow itself presents no new features. It is in eight sections, two rows of four each connected by chains in the usual way, the side ones being capable of being thrown on to the centre ones, which can then pass a gateway. A long axle, furnished at each end with a small road-wheel, passes over the top of each row of harrows riding in forks provided with cotterpins to enable the axle to be easily removed. The road-wheels just run on the ground when the harrow is at work allowing the axle to play up and down. At each end between the road-wheel and

186 *Miscellaneous Implements Exhibited at Derby Show.*

the harrow is the skeleton of half a wheel, fast to the axle. This is prevented from revolving by a lever and trip actuated by a cord from the driver's seat. The half-wheel rides—unless tripped—with its flat half down and the semicircular half up; if now the cord be pulled, the half-wheel is allowed to revolve, and the forward edge fitted with a spud catching in the ground the harrow is raised by the amount the radius of the half-wheel exceeds that of the road-wheel, thus releasing the accumulated rubbish, the back row of harrow being raised in the same way, as required, the forward progress, lifting and lowering the harrow, so long as the levers are kept tripped.

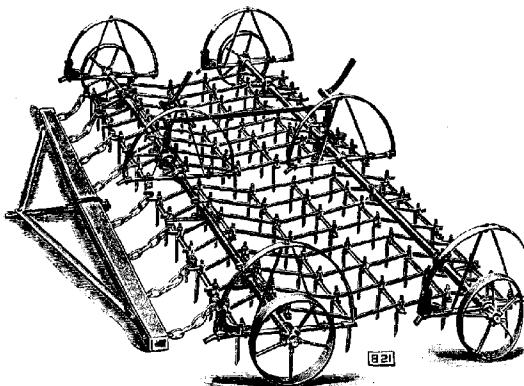


FIG. 2. DETACHABLE "DUPLEX" SELF-LIFTING GEAR FOR HARROWS.

The long axle, which is tubular, will probably have to be made of a larger diameter tube and stiffer.

Stand 124, No. 1916. Drake & Fletcher, Broadway, Maidstone. *Powder-spraying Machine comprising 3 h.p. Petrol Engine mounted on Portable Chassis, the powder being delivered into a tube and sprayed by the exhaust gases of the engine.*

A small petrol engine of the ordinary type is mounted on a wheeled frame which has to be moved along the rows of hops or fruit trees by horse power. The engine has no work to do directly except to run the rotary brush for feeding the powder into a pipe which delivers it into the exhaust pipe of the engine, which again delivers it through butterfly regulating valves into two sets of metallic flexible tubing leading to the plant it is desired to spray. The only alteration to the engine being to fit a new

xhaust cam which opens at about a  $\frac{1}{4}$  stroke instead of at  $\frac{1}{2}$  or so. The force of the exhaust should be sufficient to deliver the powder 6 ft. up into the air and under the leaves of the fruit tree or hop-vine.

Stand 162, No. 2372. Tansomes, Sims & Jefferies, Ltd., Ipswich. *Oil Engine  $\frac{1}{2}$  b.h.p. vertical, two-cycle, to start from cold on paraffin.*

In this engine the makers have got rid of the magneto, or any other form of external ignition. The engine is vertical, two-stroke, with crank case compression for scavenging and air supply, the fuel being admitted by a valve. The compression is necessarily high, being 450 lb., for on this depends the proper ignition of the charge. The high compression will probably limit the power of the engine for hand starting to about 6 h.p.

The engine functions as follows: Supposing the ignition to have just taken place with the piston at the top of the stroke, the crank case being full of fresh air at atmospheric pressure, which has been drawn in through a non-return valve, the piston descends compressing this air to about 5 lb. on its way, it overcomes first the exhaust port when nearing the end of its stroke, then the communicating port from crank case to top of piston, this admits the scavenging charge driving out the exhaust gases and filling the cylinder with fresh air which is then compressed, this is the usual two-stroke cycle. In the cylinder head is the removable valve seating of the fuel inlet valve which is only about  $\frac{1}{2}$  in. diameter with a small hole in the seat for the oil to pass through, it does not pass full area of the valve. Under the valve is a brass hat-shaped cup into which the oil falls, the only communication with the cylinder being through three or four small horizontal pin holes according to the size of the engine. The oil is fed from a closed reservoir which is under the crank case compression pressure of about 5 lb., it is admitted when the piston is at the bottom of its stroke, and falls into the cup and not into the cylinder itself. As the piston rises and increases the pressure and temperature, air is forced through the small pin holes in the side of the cup till the temperature is raised sufficiently to ignite the more volatile parts of the paraffin inside the cup; this causes a higher local pressure which forces the remainder of the oil charge through the pin holes into the heated compressed air in the cylinder where it burns.

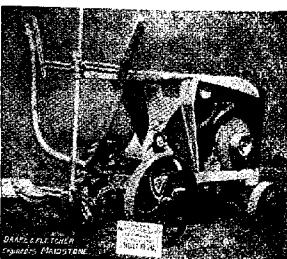


FIG. 3. POWDER-SPRAYING MACHINE.

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The engine is started by holding open a small valve till a good swing is obtained on the heavy fly-wheel, sufficient to carry the piston over five or six times after this valve has been closed when the self-ignition commences to act.

The engine is governed in two ways, either by regulating the lift of the fuel valve and consequently the amount of fuel, or cutting out working strokes by means of an inertia governor, both adjustments being on the vertical spindle working the fuel

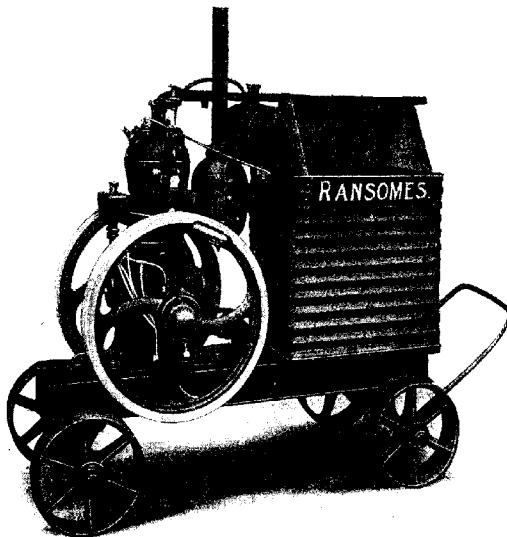


FIG. 4. OIL ENGINE.

valve. It was noticed that till the engine got well under way the explosions were rather of the order of detonations.

The lubrication is by sight feed to a pump worked by the lower part of the eccentric actuating the feed valve, the crank case having to be drained periodically. It is difficult to see any reason why, having a pump, you should not make it draw from the crank case and circulate the oil in the usual way especially when you make certain that your pump will always draw as periodically its suction is under a pressure of 5 lb.

Stand 163, No. 2435. International Harvester Co., Ltd., 80, Finsbury Pavement, London, E.C.2. *Grain Shocker.*

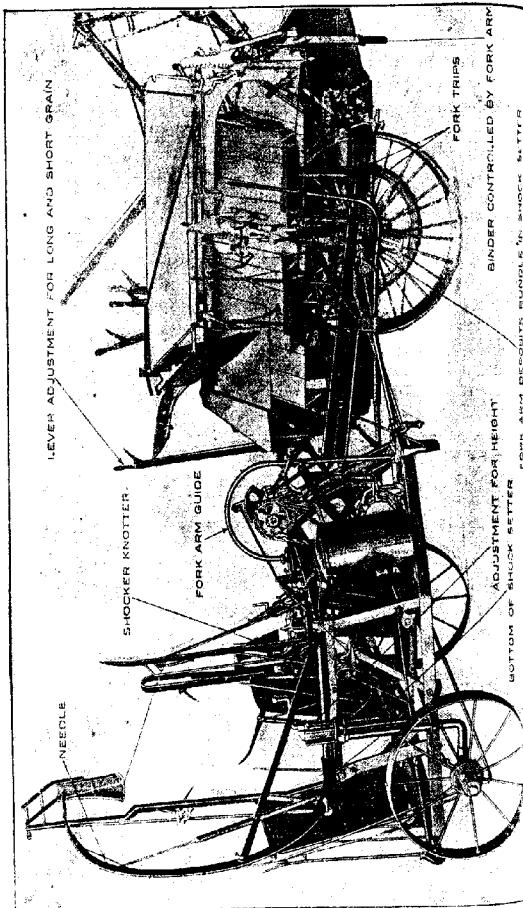
This machine, which at present is only made to be attached to two makes of binders, is designed to tie up the sheaves of corn delivered to it by the binder into bundles of five, six or seven according to the crop and deposit them on the ground in an upright position with an air space through the bundle in one direction for ventilation, and this the machine does with an almost uncanny precision ; in the showyard of course it could only be mechanically driven, and fed by hand, with sheaves of last year's straw.

Drawn behind the binder in the track of the swathe just cut and at an adjustable distance to suit the length of straw is a frame on two wheels carrying the whole of the mechanism which consists of a long arm furnished with spikes to transfer the sheaf from the delivery of the binder to the cradle of the shocker, a curved arm or needle like a glorified binder-needle to tie up the bundle of sheaves and a tilting table to tip the bundle from a horizontal to a vertical position and deposit it on the ground. This sounds quite simple to do but requires a great number of parts, which must, and do, work together and control each other. As an example of the interlocking necessary one can see that the sheaf already tied by the binder must not fall on the transferring arm till this latter is in position, and this transferring arm must not place a sheaf on the cradle or collector for the shock until this is back in its place after having been tilted to deposit the shock upon the ground.

The tied sheaf falls from the binder on to the end of the transferring arm, tripping on its way the mechanism allowing the arm to rise and carry the sheaf over on to one side of the cradle now ready to receive it. The arm then returns ready for another sheaf, an ingenious and simple mechanism causes the arm to deposit the next sheaf alongside the first and not on the top of it, the third is placed on the top of the first and so on alternately till the cradle is full. The shock binding mechanism is then tripped by somewhat the same means that the sheaf binder is tripped when it is full. The large needle then ties the sheaves together, the cradle is tipped, the shock is deposited on the ground with the sheaves on their butt ends, and the cradle returns ready for the next bundle of sheaves. All other operations being suspended by the interlocking arrangements, already referred to, till the cradle is back in its place. The guides separating the right- and left-hand lots of sheaves when the cradle is horizontal serve to separate them for ventilating purposes, when they are placed on the ground.

It was stated that there are about 2,500 machines in use in U.S.A. and Canada, but none, as yet, in England. The judges at the tractor trials last year at Lincoln had an opportunity of

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seeing the work done by the machine on a barley field, when unfortunately, the straw was much too short for a proper trial.

Stand 295, No. 3750. Nene Engineering Co., Ltd., Chapel Street, Peterborough. *Seed Drill "Sow-well" for Small Holdings.*

In this drill discs with reversible cups or revolving brushes and change wheels have all been done away with and are replaced by a plain cylinder about an inch broad shrouded at each side half an inch deep which is revolved by mounting it direct on the



FIG. 6. SEED DRILL FOR SMALL HOLDINGS.

axle or in the case of a large-wheeled drill with a number of pulters on a separate shaft driven by a chain-wheel. The cylinder revolves in a slot against the bottom of the seed-hopper ; working in radial slots in the body of the cylinder are a series of plates which, by means of a lever at the side capable of being stopped in position, can be made to protrude to a greater or less extent into the groove formed between the shrouds and the body. These form a series of cups, or compartments, of easily variable capacity which pick up the seeds and carry them over and into the hollow coulter. A spring-loaded flap works on the top of the cylinder which prevents the seed from coming over except when caught by the projecting plates. The whole machine is an exceedingly simple device. The road-wheels are fitted with ratchets so that the machine can be drawn backwards without revolving the cylinder or seed-distributor.

Some other notable exhibits also taken in catalogue order should be mentioned.

John Fowler & Company's device for the easy conversion of a traction engine into a partially effective road-roller, partially effective in that the front wheels only are changed for a roller, the rear wheels being left as they are.

On looking at a road roller it will be noticed that the peculiar shape of the bracket carrying the front part of the boiler and used as the steering-head of the front rollers, if pivoted at each side, can be folded down and under the smoke box and ordinary road wheels fitted to what was the upper part of the bracket in front of the chimney. To do this a wooden prop is placed at an angle under the boiler, the engine advanced by turning the fly-wheel thus raising the front end, the front roller disconnected and moved out of the way, the bracket, after removing a couple of bolts folded down and under the smoke box, the road-wheels placed in position and the engine moved backwards, thus lowering the smoke box and bracket on to the front wheels. The conversion of the traction engine to a roller is the reversal of these operations.

A tar-sprayer and roller combined is also shown with a hopper shingle-spreader and automatic water distributor for use with water-bound roads. The workmanship as usual with this firm leaves nothing to be desired.

The next exhibit is the Dossor seed dresser, which is a combination of the two machines that have been already exhibited at previous shows, viz., the sifter and the belt extractor. The work done by this machine in extracting weed-seeds and all refuse from the clover seeds cannot be too highly spoken of.

Martin's cultivator and Martin's ridger are noteworthy for careful design. The very practical method of securing tines or coulters or any loose part is a great improvement. The ordinary set screw is an abomination liable both to work loose and to be broken off. The new device adopts folding wedges drawn up by a bolt without any projecting part except the bolt end, which indeed would not matter if it were broken off. It is a good practical, simple job.

Petters Vicker's oil engine is remarkable for the ignition arrangement for starting. In this engine crude oil can be used the ignition after the engine has been started is automatic, but to start from cold a small wire is heated to redness by an electric current, furnished by dry batteries, or an accumulator, the oil being sprayed upon it. When well under way, the current can be switched off.

Two power crosscut saws were shown. The Pfeifer and the Christie & Penny. It is difficult to say where the difference between them lay, both seemed to work well, but it is doubtful whether, in their present form, they would stand hard and

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continuous work. The cross-head guides consisting of two round bars are mounted on an eccentric which forms a very ingenious way of rocking the saw as in handwork. The machines are brought up to a fallen tree and cut it up in place.

Makers of separators have got near the limit of efficiency and now devote themselves to details, such as lubrication. Of well-thought-out lubrication systems those of Lister & Co. and the Melotto Co. are noteworthy. The latter firm show a self-contained electrically-driven machine. Now that ball-bearings can be made to run under light load without any lubrication, it is possible that a direct electric-driven separator and without any gears, with a suspended bowl, may become possible.

The steam wagon of Messrs. Ransomes, Sims & Jefferies presents many noteworthy features. For instance, the boiler is made with a circular fire-box out of four pressed plates; it has dome top and no stays. In this wagon wherever possible plate pressings are used, as, for instance, brackets for attaching engine to boiler, and front axle pivot seatings. The main frame channelled like a motor-car has the front of the boiler sliding for expansion on its two ends which are enclosed in box-shaped pressings; care has been taken not to weaken the main frame by drilling any bolt holes in bottom web. The whole is a very well-thought-out design; exception might be taken to the back wheels and their attachments as rather falling off in simplicity of design.

The root thinner of Messrs. Corbett, Williams & Son has been much improved on that shown last year, being now a double machine to thin two rows at a time. It is thoroughly well-made. It was tried on a piece of ground which unfortunately was very sandy, the roots being patchy. The work done by the machine did not come up to expectations; a trial in regular work on a large scale next year by farmers who have purchased a machine will be able to give reliable data as to the saving to be effected by its use.

The binder hitch of Melchior Armstrong & Dessau comprises a system of levers which enable a motor-tractor to turn to either hand on reaching the end of the cut of the binder in the field slightly before the binder itself commences to turn. Manoeuvring and backing are in themselves a tricky business and not likely to be much helped by the complication of the levers.

For those who are firm believers in the salt lick for animals, blocks of pure salt with metal holders are now supplied by Crompton's Pure Salt Brick Co. They can be attached to any convenient place which the animals can reach.

The general impression conveyed by a survey of the show of implements is that the Derby Show of 1921 is one of the best, if not the best ever held.

Production during the war has taught manufacturers improved methods, notably in the direction of pressings and stamp-

ings to replace malleable iron or steel castings. Our late enemies are certainly adepts at this work, as those who had the opportunity of seeing some of the gun-carriages and lorries produced by them can testify.

Now that invention had advanced so far it is difficult to see in what direction improvement can lie except in details and in cheaper production.

It was with deep regret that the Judges learnt of the death, just before the opening of the Show, of the Hon. J. E. Cross, who has acted so many years as steward of the implements together with Mr. U. R. Burke. It is to Mr. Burke's help, together with that of Colonel Staniforth, who took Mr. Cross's place, and that of Mr. Courtney, the Society's engineer, we owe the fact that the Judges were able to get through their work so easily, and they gratefully tender them their thanks.

Penbedw, Nannerch,  
N. Wales.

HARRY W. BUDDICOM.

## REPORT OF THE STEWARD OF DAIRYING, DERBY SHOW, 1921.

### MILK YIELD TRIALS (CATTLE, CLASSES 202 to 214).

ALTHOUGH 142 cows were entered in the Milk Yield Classes only 93 competed, the large number of absentees being largely accounted for by the coal strike and an outbreak of Foot and Mouth Disease in Derbyshire some few weeks before the Show.

Nine cows out of this reduced entry were disqualified for giving milk showing less than 3 per cent. fat on the average of the five milkings, a rather larger number than in previous years. Had the percentage of fat been taken on the average of the two milkings 37 animals would have been ruled out. The abnormal season probably accounts for these results. The trials were conducted on the same scale of points as at Darlington.

The three Champion Prizes given at Darlington were again generously offered by the same Society, and were awarded as below.

**A.—For Cows of the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Breeds.**  
Champion Prize, £30.—1636 Mr. J. Watson's Red Poll, Gresenhall Molly. Reserve Number, £5.—1510 Messrs. A. & J. Brown's British Friesian. Hedges Dutch Gossip.

**B.—For Cows of the Ayrshire, Jersey and Guernsey Breeds.**  
Champion Prize, £20.—1636 Mr. R. Bruce Ward's Jersey, Caper. Reserve Number, £5.—1712 H.R.H. the Duchess of Albany's Guernsey. Bosistow Victoria.

**C.—For Cows of the Kerry and Dexter Breeds.**  
Champion Prize, £10.—1762 Mr. J. W. Towler's Kerry, Gort Curly 9th. Reserve Number, £5.—1764 Mr. J. W. Towler's Kerry, Wyersdale Clover.

Table I gives complete details of the trials, with the Prizes won in each Class.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last service	Total milk in 88 months	Pedigree			Total	Awards and Remarks
								Pet. per quart.	Pet. per quart.	Milk		
<i>Dairy Shorthorns</i>												
Class 202 853	J. L. Cross	Rouney Chara.	Aug. 16, 1914	1991	32	—	144	2:275	54:12	11:90	NH	65:02 Disqualified. Pet. H.C. below Standard.
867	Capt. H. FitzHerbert Wright	Yesterley Red Rose 4th	Oct. 21, 1914	May 20	41	—	33	10:325	43:62	13:80	10	66:72
868	H. Bickford	Stanfield Dolly 2nd	Oct. 26, 1915	Apr. 10	79	—	62	10:4775	52:62	17:10	3:00	73:62 2nd Prize.
871	Calver & Sons	River Meadow Right 4th	July 23, 1916	May 20	52	—	67	8:3025	52:62	12:10	65:17 H.C.	
873	E. G. Fairweather	Lady Kathleen	Oct. 22, 1915	May 20	52	—	99	8:3025	52:62	14:50	NH	
878	Lt.-Col. W. M. Pryor	Budforford Countess	Aug. 21, 1916	May 1	54	—	44	8:4510	44:50	16:80	69:50 H.C.	
879	J. M. Surfolkland	Keynham Fury 6th	Aug. 21, 1916	May 7	54	—	62	2:2375	62:12	11:80	1:40 74:82 Disqualified. Pet. H.C. below Standard.	
882	The Duke of Westminister	Hilton Wild Queen	June 17, 1915	May 19	42	—	49	10:3:15	48:62	12:60	20	62:42
893	Chivers & Sons	Bartolver Daisy 3rd	Sept. 2, 1917	May 9	52	—	63	4:3:10	63:25	13:80	1:30 67:65 H.C.	
901	W. G. Millar	Cherry 24th	Jan. 20, 1917	Apr. 14	77	—	57	14:3:10	63:25	13:80	3:70 54:77	
903	Lt.-Col. W. M. Pryor	Katte	Sept. 21, 1917	May 2	59	—	35	10:3:10	55:37	16:80	1:30 74:07 1st Prize.	
904	Capt. A. S. Willis	Newborough Fearnmore 3rd	Sept. 14, 1917	June 1	59	—	30	6:3:70	50:37	14:80	NH	
905	Capt. A. S. Willis	Newborough Fearnmore 7th	June 1, 1917	June 12	18	—	45	4:3:10	45:25	14:80	NH	
922	Capt. T. W. Hay	Perstute Melody	Sept. 3, 1918	May 18	43	—	46	6:2:875	48:37	11:50	30 58:15 Disqualified. Pet. H.C. below Standard.	
925	D. Johnson	Golden Rosebud	Mar. 30, 1918	Mar. 22	100	May 25, 1921	46	10:3:75	46:62	15:80	6:00 66:12 H.C.	
929	F. W. Morley	Locust Fragrance	Aug. 3, 1918	May 25	55	—	39	12:3:20	52:75	15:80	NH	
932	Lt.-Col. W. M. Pryor	Barry 27th	Sept. 25, 1918	May 8	49	—	22	12:3:20	52:75	15:80	1:30 49:56	
933	The Duke of Westminister	Barry Lilly 3rd	Sept. 10, 1918	May 2	59	—	36	4:4:5	36:25	19:80	—	
941	The Duke of Westminister											
<i>New Pedigree Dairy Shorthorns</i>												
Class 203 948	D. Albridge	Sketchley Sapphire	Unknown	May 10	51	—	74	8:3:25	74:50	13:80	1:10 88:40	
949	E. Caulwell	Juliana	Unknown	May 27	94	—	70	2:2:20	70:12	8:80	NH 78:92	
952	J. M. Surfolkland	Dairyland 3rd	Mar. 12, 1912	Apr. 28	63	—	59	2:3:295	69:12	15:10	2:30 73:52	
Class 204 981	John Evans & Son	Laurens Red	Mar. 14, 1916	May 20	102	—	40	14:4:175	40:87	16:70	5:00 62:57	
988	B. Blundell	Bundish Charly 2nd	June 1, 1915	May 3	58	—	58	14:2:35	58:87	11:40	1:30 72:07	
											Disqualified. Pet. H.C. below Standard.	

TABLE I.—MILK-YIELD CLASSES AT DERBY, 1921—*continued.*

No. in Catalogue	Faulkner	Name of cow	Date of birth	Date of first lactation	No. of days since first lacta- tion	Date of last lactation	No. of days since last lacta- tion	Points				Award and Remarks		
								Total lacta- tion in hours	Per cent. Milk age	Per cent. Milk age	Per cent. Milk age			
<i>Isaacson Reds—continued</i>														
Class 204 989	S. Blundell	Beatrice, Marcia, 2nd Deeping, Dorothea, 3rd	Aug. 27, 1914	1921	48	May 16, 1913	31	160	3.60	60.30	14.40	8.0	75-70 H.C.	
990	G. Colman	John, 1st	Sept. 1, 1914	1921	42	May 16, 1913	31	160	3.60	60.30	13.50	7.50	75-10 3rd Prize.	
992	John Evans & Son	John, 2nd	Sept. 1, 1914	1921	42	May 16, 1913	31	160	3.50	60.30	14.40	7.50	75-10 3rd Prize.	
993	John Evans & Son	Son, 1st	Sept. 1, 1914	1921	42	May 16, 1913	31	160	3.50	60.30	14.40	7.50	75-10 3rd Prize.	
994	Tom J. Gerton	Staffordshire Fairy Girl	Mar. 16, 1917	1921	35	May 16, 1913	31	160	3.35	54.47	13.50	5.0	68-57 H.C.	
996	C. E. Scorer	Tracey, No. 61.	Dec. 16, 1916	1921	35	June 11, 1913	19	100	8.40	58.92	13.40	7.0	72-02 H.C.	
998	Lt.-Col. Sir A. G.	Anterby	Mar. 1, 1911	1921	34	May 27, 1913	19	100	8.40	60.50	14.40	7.0	76-00 2nd Prize.	
999	Lt.-Col. Sir A. G.	Petwood Eliza	Apr. 13, 1917	1921	49	May 12, 1913	19	100	8.40	63.87	14.40	7.0	78-27 1st Prize.	
1000	Lt.-Col. Sir A. G.	Sudbrook 129 C.	June 28, 1914	1921	20	June 19, 1913	19	100	8.40	65.80	9.0	9.0	59-45 Disqualified, Fat Below Standard.	
Class 205 1150	W. G. Bush	Suffragette 1st	Feb. 1, 1913	1921	31	May 30, 1913	17	160	3.775	52.75	15.10	NH	67-85 1st Prize.	
1151	J. H. Chick	Nyntord Phil	July 23, 1913	1921	34	May 23, 1913	17	160	3.70	52.75	15.10	NH	65-89 2nd Prize.	
1152	N. D. Lupiton	Countess Gitter 3rd	Dec. 15, 1914	1921	99	May 23, 1913	17	160	4.175	51.92	16.70	5.0	53-32 —	
Class 206 1174	W. Hunt	Millmaid 4th	May 7, 1912	1921	37	—	—	65	14	4.05	65.87	16.20 <sup>t</sup>	NH	82-07 1st Prize.
Class 207 1183	J. T. & A. Bailey	Longhorns	Dec. 18, 1915	1921	37	—	—	16	3	3.875	48.43	15.50	NH	61-82 1st Prize.
1185	W. H. Sibley	Philly Milkmaid	July 17, 1916	1921	47	May 12, 1913	47	160	3.10	43.82	12.40	9.0	61-82 1st Prize.	
1186	W. H. Sibley	Philly Milkmaid	July 4, 1915	1921	39	June 1, 1913	39	160	4.175	30.12	16.70	NH	46-82 2nd Prize.	
1188	W. H. Sibley	Philly Milkmaid	July 4, 1915	1921	39	June 1, 1913	39	160	4.175	30.12	16.70	NH	46-82 2nd Prize.	
Class 208 1312	Sir A. E. Bowen, Bt.	Red Polls	Feb. 15, 1915	1921	64	June 16, 1921	44	4	3.40	44.25	13.60	2.4	60-25 H.C.	
1317	Marchioness of Lady Vanity	Colworth Seagull	June 5, 1916	1921	68	May 25, 1921	40	40	3.00	49.00	12.00	2.80	54-80 —	
1318	Marchioness of Graham	Roll Call	Mar. 16, 1914	1921	70	May 27, 1921	46	10	3.80	49.62	15.20	3.00	64-82 H.C.	
1321	Major J. A. Morrison	Kettleburgh Rosie 2nd C	Jan. 17, 1912	1921	243	Oct. 20, 1920	33	131	8	32.50	13.60	—	45-10 —	
1322	Major J. A. Morrison	Kettleburgh Rosie 2nd D	Nov. 30, 1913	1921	28	May 28, 1913	33	131	8	32.50	13.60	—	45-10 —	
1327	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	53	131	8	32.50	13.60	—	69-15 H.C.	
1328	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	54	131	8	32.50	13.60	—	69-15 H.C.	
1329	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	55	131	8	32.50	13.60	—	69-15 H.C.	
1330	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	56	131	8	32.50	13.60	—	69-15 H.C.	
1331	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	57	131	8	32.50	13.60	—	69-15 H.C.	
1332	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	58	131	8	32.50	13.60	—	69-15 H.C.	
1333	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	59	131	8	32.50	13.60	—	69-15 H.C.	
1334	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	60	131	8	32.50	13.60	—	69-15 H.C.	
1335	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	61	131	8	32.50	13.60	—	69-15 H.C.	
1336	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	62	131	8	32.50	13.60	—	69-15 H.C.	
1337	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	63	131	8	32.50	13.60	—	69-15 H.C.	
1338	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	64	131	8	32.50	13.60	—	69-15 H.C.	
1339	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	65	131	8	32.50	13.60	—	69-15 H.C.	
1340	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	66	131	8	32.50	13.60	—	69-15 H.C.	
1341	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	67	131	8	32.50	13.60	—	69-15 H.C.	
1342	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	68	131	8	32.50	13.60	—	69-15 H.C.	
1343	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	69	131	8	32.50	13.60	—	69-15 H.C.	
1344	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	70	131	8	32.50	13.60	—	69-15 H.C.	
1345	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	71	131	8	32.50	13.60	—	69-15 H.C.	
1346	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	72	131	8	32.50	13.60	—	69-15 H.C.	
1347	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	73	131	8	32.50	13.60	—	69-15 H.C.	
1348	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	74	131	8	32.50	13.60	—	69-15 H.C.	
1349	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	75	131	8	32.50	13.60	—	69-15 H.C.	
1350	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	76	131	8	32.50	13.60	—	69-15 H.C.	
1351	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	77	131	8	32.50	13.60	—	69-15 H.C.	
1352	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	78	131	8	32.50	13.60	—	69-15 H.C.	
1353	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	79	131	8	32.50	13.60	—	69-15 H.C.	
1354	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	80	131	8	32.50	13.60	—	69-15 H.C.	
1355	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	81	131	8	32.50	13.60	—	69-15 H.C.	
1356	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	82	131	8	32.50	13.60	—	69-15 H.C.	
1357	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	83	131	8	32.50	13.60	—	69-15 H.C.	
1358	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	84	131	8	32.50	13.60	—	69-15 H.C.	
1359	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	85	131	8	32.50	13.60	—	69-15 H.C.	
1360	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	86	131	8	32.50	13.60	—	69-15 H.C.	
1361	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	87	131	8	32.50	13.60	—	69-15 H.C.	
1362	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	88	131	8	32.50	13.60	—	69-15 H.C.	
1363	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	89	131	8	32.50	13.60	—	69-15 H.C.	
1364	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	90	131	8	32.50	13.60	—	69-15 H.C.	
1365	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	91	131	8	32.50	13.60	—	69-15 H.C.	
1366	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	92	131	8	32.50	13.60	—	69-15 H.C.	
1367	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	93	131	8	32.50	13.60	—	69-15 H.C.	
1368	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	94	131	8	32.50	13.60	—	69-15 H.C.	
1369	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	95	131	8	32.50	13.60	—	69-15 H.C.	
1370	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	96	131	8	32.50	13.60	—	69-15 H.C.	
1371	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	97	131	8	32.50	13.60	—	69-15 H.C.	
1372	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	98	131	8	32.50	13.60	—	69-15 H.C.	
1373	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	99	131	8	32.50	13.60	—	69-15 H.C.	
1374	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	100	131	8	32.50	13.60	—	69-15 H.C.	
1375	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	101	131	8	32.50	13.60	—	69-15 H.C.	
1376	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	102	131	8	32.50	13.60	—	69-15 H.C.	
1377	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	103	131	8	32.50	13.60	—	69-15 H.C.	
1378	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	104	131	8	32.50	13.60	—	69-15 H.C.	
1379	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	105	131	8	32.50	13.60	—	69-15 H.C.	
1380	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	106	131	8	32.50	13.60	—	69-15 H.C.	
1381	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	107	131	8	32.50	13.60	—	69-15 H.C.	
1382	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921	108	131	8	32.50	13.60	—	69-15 H.C.	
1383	G. D. Smith	Strenuous Aries	Mar. 10, 1917	1921	77	Apr. 22, 1921</								

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calv.	No. of days from last milk	Date of last Services	Total no. in herd in 21st inst.	Ex- part- cent- ages	Prizes			Awards and Remarks		
									Lb.	oz.	Pct. Milk	Pct. Lacta- tion		
108 209	W. L. Ferguson	Arabian Alice	Mar. 21, 1915	1921	39	4	330	39-25	13-20	3-30	55-75	—		
1446	W. L. Ferguson	Moorside Amoretta 2nd	Apr. 8, 1912	1918	42	—	58	12	2-55	58-75	10-20	69-15	Distinguished, Nat. below Standard.	
1448	W. Gibson	—	May 19	1919	—	—	—	—	—	—	—	—	—	
ass 210	A. & J. Brown	British Peasant	Oct. 18, 1916	1916	45	May 7, 1921	42	12	3-10	42-75	12-40	8-00	63-15 H.C.	
1509	A. & J. Brown	Hedges Dutch Calfum	July 15, 1916	1916	71	Apr. 20	78	12	3-40	78-75	13-60	3-10	95-45	
1510	A. & J. Brown	Hedges Dutch Calfum	Mar. 7, 1917	1917	24	Feb. 24	126	58	8	2-65	68-50	10-60	8-00	77-70
1510	Duke of Marlborough	Dundonald Holdings	Oct. 22, 1915	1915	109	Mar. 13	109	70	4	3-05	66-50	15-50	6-90	76-90
1510	Duke of Marlborough	Crawley Violet 3rd	Sept. 18, 1917	1917	13	May 13	13	37	8	3-60	70-25	14-40	8-00	85-45
1522	James Russell	Athmore Peasant Lass	Nov. 7, 1916	1916	14	Aug. 14	47	—	—	38-50	14-00	70	52-20	2nd Prize.
1523	W. & R. Wallace	Krelworth Lillian	Nov. 7, 1916	1916	65	Apr. 26	65	45	8	2-85	45-50	11-40	2-60	Distinguished, Nat. below Standard.
1528	J. R. Hughes	Mackinado Lady Nan	May 6, 1918	1918	—	—	—	—	—	—	—	—	—	
ass 211	A. E. Bondi	Jerseys	Feb. 7, 1917	1917	68	June 2, 1921	30	8	4-50	50-50	15-00	2-80	51-30	
1610	Mrs. Evelyn	Frontier's Maid	Aug. 10, 1917	1917	132	June 14, 1921	31	12	4-30	46-25	17-00	8-00	51-25	
1616	Capt. E. W. S.	Fairavine Hussy	Mar. 26, 1917	1917	54	May 7	—	—	—	—	—	—	—	
1619	Capt. E. W. S.	Elfrida	—	—	—	—	—	—	—	—	—	—	—	
1623	Major Hon. H. Pearson	Bessy's Belle	Mar. 29, 1910	1910	68	Apr. 23	—	27	0	3-40	27-00	13-60	2-80	63-40
1626	J. H. N. Roberts	Quaintness	Apr. 4, 1917	1917	52	May 9	—	—	—	—	—	—	—	
1627	Mrs. Rudd	Meadow Vale Pridé	Apr. 1, 1913	1913	14	June 16	14	—	—	—	—	—	—	
1628	Mrs. Rudd	Premature	May 14, 1916	1916	63	Apr. 28	39	0	4-50	39-00	13-00	2-30	59-30	
1631	Hon. Mrs. Murray Smith	Cowgirl's Spring Queen	Apr. 27, 1915	1915	183	Dec. 29, 20	183	28	4	3-25	28-25	12-00	4-75	H.C.
1632	Hon. Mrs. Murray Smith	Silver Mary	June 14, 1917	1917	253	Oct. 20, 20	253	21	12	5-375	21-75	25-30	12-00	56-05
1634	Hon. Mrs. Tennant	Youthful	Nov. 11, 1917	1917	107	Mar. 15	107	27	0	6-85	27-00	21-40	6-70	55-10
1636	R. Bruce Ward	Caper	Jan. 24, 1917	1917	9	Apr. 9	82	60	0	5-325	60-00	22-10	4-20	86-30
1637	R. Bruce Ward	Evergreen	Sept. 4, 1916	1916	2	May	59	—	—	—	—	—	—	3rd Prize.
								39	0	5-275	39-00	21-10	1-00	62-00

TABLE I.—MILK-YIELD CLASSES AT DERBY, 1921—continued.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf in milk	No. of days in milk	Date of last service	Total milk in 24 hours	Points			Awards and Remarks	
								Patent	Per cent.	Lactation		
								Per cent.	Min.	Max.		
<i>Jersey—continued.</i>												
1621	A. E. Bond	Covaiet's Hussey	Apr. 21, 1918	Apr. 28	63	—	100	5.875	88.75	15.50	2.30	
1642	Hon. Mrs. Murray	Valetta's Liss	Feb. 18, 1918	Feb. 28	68	—	83	4.75	82.25	10.50	2.50	
1645	Hon. Mrs. Tennant	Buckstone Fairy	Jan. 10, 1918	Feb. 3	147	June 14, 1921	26	6.05	25.00	42.75	4.00	
1646	Hon. Mrs. Tennant	Firestone	Jan. 10, 1918	Mar. 14	108	May 20, 1921	18	6.70	18.75	26.80	3.20	
1650	Hon. Mrs. Tennant	Ramondia	Mar. 12, 1919	Feb. 17	133	May 6, 1921	27	8	3.75	27.50	14.90	
1660	Hon. Mrs. Tennant	—	—	—	—	—	—	—	—	—	6.30	
<i>Guernsey</i>												
1672	H.R.H. The Duchess of Albany	Brookstone Victoria	Mar. 20, 1916	Apr. 10	81	—	61	1.12	4.625	51.75	18.50	
1712	H.R.H. The Duchess of Albany	Troquean Lady 2nd	July 20, 1915	Feb. 24	126	May 11, 1921	40	1.12	6.075	40.75	24.30	
1713	H.R.H. The Duchess of Albany	—	—	—	—	—	8-60	—	—	—	73.65	
1715	G. F. Ferrand	Fussey's Dora	July 21, 1912	Mar. 2	150	June 23, 1921	46	8	4.025	46.50	16.10	
1716	G. F. Ferrand	Northland Diamond	July 21, 1914	Mar. 2	150	—	45	8	4.275	43.50	17.50	
1719	Mrs. J. Jervois	—	July 3, 1917	Mar. 25	35	—	42	8	3.85	42.50	15.40	
1720	Mrs. J. Jervois	Munro's 2nd	July 3, 1917	Mar. 11	50	May 16, 1921	36	8	4.975	35.50	19.90	
1722	Mrs. W. Howard Palmer	Murphy's Yann	Sept. 3, 1914	Feb. 10	140	—	—	—	—	—	8.00	
1725	Sir James Remnant	Dene Maid of Athens	Jan. 11, 1917	June 6	24	—	40	8	3.625	40.50	14.50	
1726	G. P. Sandy	Isle's Mousette 9th	June 27, 1916	Apr. 30	61	—	30	1.12	3.435	30.92	13.70	
1727	G. P. Sandy	Isle's Mousette 10th	June 28, 1917	May 21	52	—	22	1.12	4.85	28.75	19.40	
1728	E. J. Wythes	Isle's Mousette 11th	May 19	May 21	42	—	45	0	3.65	45.00	14.60	
1729	E. J. Wythes	Isle's Mousette 12th	May 28, 1913	Apr. 28	—	—	—	—	—	—	50.80	
<i>Kerrite</i>												
1733	Lady Fitzgerald	Buckland Hazel	Apr. 17, 1918	June 4	26	—	39	1.12	3.25	30.75	13.00	
1753	J. W. Towler	Goat Brook	May 14, 1915	June 7	23	—	47	1.12	3.475	37.75	14.70	
1752	J. W. Towler	Goat Brook	May 16, 1912	June 11	19	—	42	8	4.525	45.00	18.10	
1753	J. W. Towler	Wyrestalls Clover	1908	May 13	48	—	45	0	3.85	45.00	15.40	
1765	Capt. Nelson Zamora	Minley Mistress	1908	May 31	30	—	40	1.12	3.70	40.75	14.80	
<i>Dorfera</i>												
1807	A. C. King	Fe. Marchant Mandoline	Mar. 21, 1913	May 1	60	—	45	0	3.30	45.00	13.20	
1811	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 4	55	—	40	0	3.65	45.00	12.50	
<i>2nd Prize.</i>												
1807	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 1	60	—	45	0	3.30	45.00	13.20	
1811	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 4	55	—	40	0	3.65	45.00	12.50	
<i>3rd Prize.</i>												
1807	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 1	60	—	45	0	3.30	45.00	13.20	
1811	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 4	55	—	40	0	3.65	45.00	12.50	
<i>4th Prize.</i>												
1807	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 1	60	—	45	0	3.30	45.00	13.20	
1811	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 4	55	—	40	0	3.65	45.00	12.50	
<i>5th Prize.</i>												
1807	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 1	60	—	45	0	3.30	45.00	13.20	
1811	A. C. King	Fe. Marchant Mandoline	June 21, 1914	May 4	55	—	40	0	3.65	45.00	12.50	

Table II shows the average results of all the animals competing under their respective breeds.

TABLE II.—*Average Results of the Cattle in the Milk Yield Classes.*

No. of cows competing.	Breed.	Days in Milk.	Milk.		Fat per cent.	Points.
			Lb.	oz.		
20	Dairy Shorthorns (Pedigree)	46	46	15 $\frac{1}{2}$	3.54	61.70
3	Dairy Shorthorns (Non-Pedigree)	49	67	14 $\frac{2}{3}$	2.82	79.20
11	Lincoln Red Shorthorns	43	55	1 $\frac{1}{2}$	3.47	69.26
3	Devons	59	44	10 $\frac{1}{2}$	3.95	61.32
1	South Devons	37	65	14	4.05	82.07
3	Longhorns	31	39	15 $\frac{1}{2}$	3.71	54.79
8 <sup>1</sup>	Red Polls	71	50	13 $\frac{1}{2}$	3.57	68.22
2	Ayrshires	57	49	0	2.92	62.38
7	British Friesians	87	55	10 $\frac{1}{2}$	3.29	73.51
17	Jerseys	97	33	1 $\frac{1}{2}$	4.74	53.00
11	Guernseys	73	41	3 $\frac{1}{2}$	4.34	61.89
5	Kerries	29	42	8 $\frac{1}{2}$	3.80	57.75
2	Dexters	57	37	0	3.17	51.38

<sup>1</sup> Nine Red Poll Cows competed, but as one of them, No. 1321, had been in milk 243 days and under Regulation 37 had forfeited her lactation points, I have not included her in the average results.

#### BUTTER TESTS (CLASSES 215A & B).

The number of cows competing for these prizes was 58 out of an entry of 96.

The cows were weighed and divided into the two classes on Tuesday evening, June 28, and all the cattle, both in these and the Milk Yield Classes, were milked out on Wednesday at 5 p.m.

The prizes were awarded on the same scale of points and under the same conditions as at Darlington.

The full particulars of the trials are given in Table III, and the averages of the various breeds in Table IV.

TABLE III.—RESULTS of BUTTER TESTS AT DERBY, 1921.  
Cows exceeding 900 lb. live weight.

TABLE III.—RESULTS OF BUTTER TESTS AT DERBY, 1921—*continued*.

“*Revolving* the number of lbs. of milk required to make 1 lb. of butter. Ten lbs. of milk are reckoned as equal to an imperial gallon.

TABLE III.—RESULTS OF BUTTER TESTS AT DERBY, 1921—*continued.*  
CLASS 215B.—COWS NOT EXCEEDING 900 LB. LIVE WEIGHT.

The "Butter ratio" represents the number of lbs. of milk required to make 1 lb. of butter. Ten lbs. of milk are reckoned as equal to an imperial gallon.

TABLE IV.—*Average Results of the Cattle in the Butter Test Classes.*

CLASS 215A.—EXCEEDING 900 lb. LIVE WEIGHT.

No. of cows competing.	Breed.	Live weight.	Days in milk.	Milk.	Butter.	Ratio.	Points.	
							Lb.	oz.
9	Dairy Shorthorns (Pedigree)	1377	34	49 3 $\frac{1}{2}$	1 10 7 $\frac{1}{2}$	29.62	26.58	
1	Do. (Non-Pedigree)	1302	63	59 2	1 15	30.51	33.30	
8	Lincoln Red Shorthorns	1489	46	55 7 $\frac{1}{2}$	2 1 $\frac{1}{2}$	26.18	34.50	
3	Devons	1344	50	44 10	1 10 7 $\frac{1}{2}$	27.01	28.48	
1	South Devons	1673	37	65 10	2 13 $\frac{1}{2}$	23.28	45.25	
1 *	Red Polls	1365	33	53 12	1 13 $\frac{1}{2}$	29.16	29.56	
1	Ayrshires	1225	42	58 12	1 9 $\frac{1}{2}$	36.50	25.95	
3	British Friesians	1430	52	53 14 $\frac{1}{2}$	1 12 $\frac{1}{2}$	30.26	29.70	
4	Jerseys	973	96	44 12	6 6 $\frac{1}{2}$	18.41	44.27	
6	Guernseys	1050	61	43 6 $\frac{1}{2}$	1 12 $\frac{1}{2}$	24.07	30.90	
3	Kerrics	945	30	45 1 $\frac{1}{2}$	1 13 $\frac{1}{2}$	24.01	29.91	

\* See note on page 199.

CLASS 215B.—NOT EXCEEDING 900 lb. LIVE WEIGHT.

16	Jerseys	809	94	29 10 $\frac{1}{2}$	1 7 $\frac{1}{2}$	19.70	29.27	
1	Guernseys	894	61	30 12	1 0 $\frac{1}{2}$	30.27	18.35	

EXPERIMENTS IN THE DAIRY.

As there are a good many herds of British Friesian cattle in the Midlands, it was suggested to me that an experiment in making cheese from British Friesian and Shorthorn milks might be interesting as showing the comparative value of such milks for that purpose.

The type of cheese suggested was Cheshire, and as will be seen in the following tables, six cheeses in all were made—two from mixed evening and morning milk, two from evening milk only, and two from morning milk only. As in an experiment of this kind the greatest accuracy and impartiality must be maintained, no apology is necessary for giving the following details.

When the milk is brought by the cowmen to the milk receiving office at the Dairy, each man has to give the breed of the cow and the name of the owner before the milk is weighed. These, with the weight of milk, are entered into a book, which the cowman signs before he is paid for the milk.

The milk is strained twice, the first time when it is weighed, and the second when, after weighing, it is poured into the churn labelled with the name of the breed. In this way within an

TABLE V.—MILK-YIELD CLASSES FOR GOATS AT DERBY, 1921.

Exhibitor No. 4 5 6 7 8	Name of goat	Breed	Date of birth	Date of parturition	Milk yield lb. per day	Percentage age of fat	Ounces of skimmed milk per pint	Ounces of skimmed milk per pint not fat	Pounds				Awards and Remarks	
									Milk yield lb. per day		Pounds			
									lb.	oz.	lb.	oz.		
1871	Mrs. Harold Gladstone	Saddleback Mavis	Aug 17, 1920	May 17, 1921	35	15	5 lb. 10 oz.	5 lb. 9 oz.	5 lb. 9 oz.	5 lb. 9 oz.	6 lb. 7 oz.	6 lb. 6 oz.	1st Prize Class 228	
1872	Mrs. Mabel Grace	Brentmoor Beauty	Aug 17, 1920	May 8, 1921	31	4	8 lb. 4 oz.	7 lb. 12 oz.	6 lb. 98 oz.	5 lb. 50 oz.	7 lb. 14 oz.	7 lb. 11 oz.	1st Prize Class 228	
1877	Mrs. K. F. Folly	Regina Agnesine	Aug 17, 1920	May 14, 1921	43	4	6 lb. 3 oz.	9 lb. 3 oz.	4 lb. 58 oz.	3 lb. 55 oz.	6 lb. 58 oz.	6 lb. 50 oz.	1st Prize Class 228	
1891	E. A. Wainwiley	Atherstone Fath	Aug 17, 1920	May 13, 1921	209	4	1	3 lb. 7 oz.	4 lb. 1 oz.	4 lb. 29 oz.	2 lb. 16 oz.	4 lb. 74 oz.	4 lb. 52 oz.	1st Prize Class 228
1892	Baroness Burton	Whitland Tomy	Aug 17, 1920	May 16, 1921	104	4	1	3 lb. 7 oz.	3 lb. 7 oz.	3 lb. 36 oz.	2 lb. 16 oz.	4 lb. 53 oz.	4 lb. 54 oz.	1st Prize Class 228
1895	Cyril B. Payne	Firma	Aug 17, 1920	May 19, 1921	121	4	1	3 lb. 10 oz.	8 lb. 10 oz.	3 lb. 30 oz.	2 lb. 29 oz.	1 lb. 96 oz.	1 lb. 95 oz.	1st Prize Class 228
1896	Mrs. Arthur Absey	Preference	Aug 17, 1920	June 1, 1921	27	5	1	3 lb. 10 oz.	8 lb. 11 oz.	5 lb. 56 oz.	4 lb. 78 oz.	3 lb. 36 oz.	3 lb. 13 oz.	1st Prize Class 228
1658	Mrs. G. M. Stannard	Prichley Chardwell	Aug 17, 1920	Jan. 26, 1921	61	5	3	3 lb. 12 oz.	8 lb. 16 oz.	3 lb. 04 oz.	3 lb. 05 oz.	2 lb. 13 oz.	2 lb. 05 oz.	1st Prize Class 228
1659	Mrs. G. M. Stannard	Prichley Chas.	Aug 17, 1920	Feb. 10, 1921	113	3	9	3 lb. 11 oz.	6 lb. 4 oz.	3 lb. 12 oz.	3 lb. 07 oz.	1 lb. 57 oz.	1 lb. 56 oz.	1st Prize Class 228
1660	Cyril R. Payne	Prudent of Basbier	Aug 17, 1920	Feb. 14, 1921	141	3	15	3 lb. 7 oz.	2 lb. 2 oz.	4 lb. 01 oz.	3 lb. 00 oz.	2 lb. 19 oz.	2 lb. 18 oz.	1st Prize Class 228
1661	E. A. Wainwiley	Atherstone Clarity	Aug 17, 1920	Jan. 31, 1921	145	4	13 lb. 1 oz.	4 lb. 14 oz.	4 lb. 35 oz.	3 lb. 31 oz.	4 lb. 48 oz.	4 lb. 47 oz.	1st Prize Class 228	
1662	E. A. Wainwiley	Aug 17, 1920	Feb. 24, 1921	145	4	13 lb. 1 oz.	4 lb. 14 oz.	4 lb. 35 oz.	3 lb. 31 oz.	4 lb. 48 oz.	4 lb. 47 oz.	1st Prize Class 228		
1663	E. A. Wainwiley	Torrester Stowford	Aug 17, 1920	Feb. 12, 1921	136	4	8	3 lb. 11 oz.	8 lb. 3 oz.	4 lb. 57 oz.	3 lb. 20 oz.	2 lb. 23 oz.	2 lb. 12 oz.	1st Prize Class 228
1664	E. A. Wainwiley	Aug 17, 1920	Feb. 12, 1921	136	4	8	3 lb. 11 oz.	8 lb. 3 oz.	4 lb. 57 oz.	3 lb. 20 oz.	2 lb. 23 oz.	2 lb. 12 oz.	1st Prize Class 228	

Total

Pounds

Total

Total

Pounds

Total

Total

Pounds

Total

Total

Pounds

Total

Total

Pounds

Total

Total

Pounds

Total

Total

Pounds

hour or so some fifteen to twenty churns of milk labelled with the various breed names are ready for experimental work.

The quantities of milk required for the various experiments are next taken, the mixing of the milk in the churns by the pail and plunger being continuous until all the quantities required have been weighed out.

The tables on p. 206 give full details of the experiments.

The abnormal weather during July, August and September made cheese-making very difficult, with the result that the cheeses lost considerable weight and fat, and ripened too quickly; but for this it is probable that some of the figures in the tables would have shown an improvement over those recorded.

An experiment on similar lines another year would be useful and instructive, as although the Shorthorn milk gave slightly more favourable results, another trial might modify the figures.

#### BROM-CRESOL PURPLE TEST.

In the report of the Steward of Dairying at the Darlington Show, Captain John Golding, of the National Institute for Research in Dairying, described the process and the practical value of this test in detecting abnormal milk, such as that known in Yorkshire as "Felon Milk," in Scotland as "Weed," and milk from cattle suffering from "Garget."

At Derby, Captain Golding demonstrated the utility of a new application of the test designed by him for practical work in the cowsheds.

Yellow test papers were prepared by soaking sheets of specially purified filter paper in a saturated aqueous solution of the brom-cresol purple indicator (0·09 per cent.). These sheets were dried and cut into strips, four of which were fastened together in a fan shape with a wire paper clip, and hung ready for use on a piece of wire, as many fans being prepared as there were cows to be tested.

A drop of the first milk from each teat is drawn on to one of each of the four strips, so that the complete fan represents the milk from each quarter of the cow. The colour which is produced on each strip is noted, abnormality in reaction being clearly shown by the production of a deep purple colour on the prepared strip.

Through the kindness of Mr. A. Lovie, of Derby, Captain Golding was enabled to take samples of fresh milk each day from cows in certain herds in the neighbourhood of Derby for demonstration purposes. The results were similar to those obtained at Darlington, and show that about 5 per cent. of the teats yielded milk of abnormal reaction.

In some cases cows whose milk was affected were known to

TABLE VI.

Breed	Date	Temperature		Time		Ability		Grind- ing
		Dairy	Milk when renned	a.m.	Coagulation commencing	Differences	Coagulation complete	
Shorthorn	June 27	53	Fair.	11:33	11:11	12:15	12:22	.10
British Friesian	June 27	58	Fair.	11:38	11:41	12:45	94	.5
Shorthorn	June 28	64	Fair.	11:57	11:18	11	10	.52
British Friesian	June 28	64	Fair.	11:50	11:31	11	10	.52
Shorthorn	June 29	60	Fair.	10:55	11:15	10	94	.72
British Friesian	June 29	60	Fair.	10:51	11:12	11	10	.48

TABLE VII.

Breed	Date	Milk in gallons			Salt	Weight of curd	Weight from press	Weight when ripe	Loss in weight	Remarks
		Galons	Galons	Galons						
Shorthorn	June 27	10	10	20	Oz.	Lbs.	Lbs.	Lbs.	Lbs.	Flavour very good
British Friesian	June 27	10	10	20	94	234	18	234	64	Flavour good, blue mould.
Shorthorn	June 28	—	—	20	10	234	194	194	34	Quality and taste good.
British Friesian	June 28	—	—	20	84	234	184	184	34	Flavour good.
Shorthorn	June 29	20	—	20	94	234	10	234	34	Flavour very good, slight blue mould.
British Friesian	June 29	20	—	20	23	224	174	174	6	Flavour very good, slight blue mould.

have had a "cold" in a particular quarter, in other cases alkaline milk was produced without the cause being ascertained.

The usefulness of this simple test is further shown by the fact that a number of "blind" teats were found in the majority of herds visited.

An early indication of abnormality in milk such as is given by this test should save much loss to the farmer if, of course, appropriate treatment were at once given to the animals affected.

Captain Golding will be happy to answer any questions on this test if they are addressed to him at the National Research Institute in Dairying at University College, Reading.

#### DIFFERENT METHODS OF CHURNING.

As at the Derby Show the amended "Simple Rules for Butter Making" were on sale for the first time, a few remarks on instructions given under the heading "New Method" may not be considered out of place.

In an article on "Dairy Cattle and the Butter Test" which appeared in the seventieth volume of the Society's JOURNAL for 1909, at page 48, the temperature at which sweet cream should be churned in a butter-test competition and also the method adopted for raising the temperature of the cream were given, these figures being based on experience in judging these competitions during the previous nineteen years.

Since that date I have superintended many more of these trials, and I have invariably found that the use of warm water has not only lightened the work of those churning, but has had a marked effect for good on the quantity, quality and colour of the butters produced, the caseous matter being separated from the grains of butter and drawn off in the butter-milk, this last showing no fat or unchurned cream.

In the annual report for the season 1920-1921 of the Butter and Cheese Control Schemes of the Irish Agricultural Organisation Society, Ltd., Mr. D. Houston, the bacteriologist, in writing of the putrefiers in milk and butter, states that "the particular ingredient in butter that these putrefiers live, grow and multiply upon, is the casein of milk which exists in the form of extremely minute particles that the washing and making process fail to eliminate."<sup>1</sup>

I am quite in agreement with the last sentence when the washing water is at a low temperature, as in my opinion such washing tends to solidify the casein round the butter grains, and so make it impossible to "eliminate" the curd.

<sup>1</sup> Butter and Cheese Control Schemes of the Irish Agricultural Organisation Society, Ltd., 1920-1921, The Plunket House, Merrion Square, Dublin.

The addition of warm water, if used with intelligence, should cause the caseous matter to run off in the butter milk.

At Derby this year several preliminary trials with various milks were carried out, and it is hoped that some exhaustive trials of the two methods named in the "Simple Rules" may be undertaken at the Cambridge Show.

Scalded cream experiments were carried out as at Darlington, but as they confirmed previous results, the details of which are given in the leaflet on "Scalded Cream" published by the Society, no mention need be made of them here.

Cream and soft cheeses, and cheese mixture were made and disposed of during the week.

As in previous years, I desire to express my grateful thanks to my Assistant Stewards, to Mr. Hasted, and to all who helped in the Dairy during the week.

The work is heavy and the hours are long, but nothing seems to damp the enthusiasm of the workers (particularly the ladies), and this makes the task of the Steward of Dairying comparatively easy.

ERNEST MATHEWS.

Little Shardeloes,  
Amersham, Bucks.

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#### AGRICULTURAL EDUCATION EXHIBIT, DERBY, 1921.

In the Report on this Exhibit at Darlington, 1920, it was suggested that exhibitors should pay attention to displaying their interesting data and materials more effectively and that they should consider with care the capacities and requirements of their audience. Agricultural education and research in this country requires to be justified by results, and the Royal Show offers the best recurring opportunity for impressing a large section of the general public with the importance and value of the work. But to judge by the attendance at the Education marquee the general public are far more interested in the achievements of individuals and firms, whether in the production of livestock, machinery, or other things, than in the work of the educational institutions. This is almost entirely the fault of those responsible for selecting and staging the educational exhibits. They have the goods but they do not "put them in the shop window"; they have the ideas but rarely succeed in "putting them across the footlights." This was much more marked at Derby than at Darlington in the previous year. On some days the attendance was very small, and during some hours nobody except the persons in charge were to be seen

near the exhibits. Occasionally it was difficult to find an attendant, or at least to find one who could deal adequately with the subjects displayed.

The display of dairy produce by the Midland Agricultural and Dairy College was both good and effectively staged. Placed as it was immediately in front of the entrance it was the chief attraction of the whole Exhibit. During some days the instruments of the Meteorological Office, and the reports from the instruments outside or near the entrance, also attracted a considerable number of visitors. These two sections attracted many more people than the whole of the rest of the Exhibit.

On behalf of the exhibitors it may be urged that the work which is of immediate value is not done amongst a crowd, but is most effective when comparatively few people can be dealt with individually. This is undoubtedly true, but unless the individuals are first attracted to the exhibits there are no means by which their interests can be either stimulated or discovered. Moreover, the two functions of the Exhibit—the attempt to interest and instruct the general public in the importance of the work, and the stimulation and discovery of interests of agriculturists with the possibility of establishing personal relationships between them and the demonstrators—can be kept clearly in view. The two functions do not come into conflict except when the object is to pursue one only.

The range of exhibits was not so wide as that at Darlington in 1920, interests were narrowed down, the attendance was smaller and visitors were not so well impressed. This was undoubtedly due in part to the absence of exhibits from elementary schools within the area. This section of the Exhibit was always one of the most popular attractions. The reasons for this are quite simple. Interest is aroused in the homes of the villages within the area by the work of preparing and collecting the exhibits, and the work of children is always attractive to the general public. Whenever it is possible it is worth while having an exhibit of the work of elementary schools if only as an introduction to the general Exhibit.

As the R.A.S.E. is a national institution and the Royal Show a national event of first-rate importance to the industry and to all sections concerned with its welfare it may perhaps be suggested that the Agricultural Education Association should undertake the organisation and staging of one comprehensive exhibit showing the best features of the work which is being done for the industry through research, demonstration and education. This would not necessarily take the place of exhibits by particular institutions or rob them of the credit for their special work, for institutions might then stage separate exhibits illustrating their individual interests and work, or have their contribution to

the general exhibit specially labelled. The Agricultural Education Association had a stand at Derby, as at Darlington the previous year, but the display was limited to printed pamphlets and prospectuses.

As already stated, the Midland Agricultural and Dairy College staged an attractive display of dairy produce. Illustrations of pot trials were effective as far as they went, but pot trials do not make much impression on the rank and file of agriculturists. The College required more space for the staging of some of its exhibits, for they were too crowded and cramped to make possible an effective display. It was unfortunate that the display of willows and of the mechanical stripper for basket-making purposes was for the most part out of sight. This should have proved attractive to many people from the Midland osier-growing area. Under the general auspices of the Midland Agricultural and Dairy College exhibits were staged by the Agricultural Education Departments of Derbyshire, Leicestershire, Nottinghamshire and the Lindsey Division of Lincolnshire. From Derbyshire there were interesting exhibits illustrating conditions on the Carr soils, and turves showing the effect of basic slag and lime. These samples of turf are always useful, but the suggestions made in the Report on the Education Exhibit, Darlington, 1920, might be again repeated. Exhibits of damage by smoke were effective, but again the economy of methods of treatment and their results should be indicated in some way. The Nottinghamshire Education Department was breaking new ground by exhibits of growing mixtures of lupins and oats. This should be a fruitful line of demonstration for the light-land areas. A useful collection of specimens showing diseases of poultry was staged by the Leicestershire Education Department, but this exhibit was much too crowded to be of real value. If exhibitors could realise how quickly the perceptions of the normal person become dulled when presented with a large number of objects for attention they would stage exhibits to provide for some change and rest for the eyes of the people who they wish to examine their specimens. Several exhibits in this section would have been more effective if a number of the individual specimens had been omitted. The exhibit staged by the Lindsey Education Department was below the general standard of interest and attractiveness.

The National Institute for Research in Dairying and University College, Reading, had a large exhibit which was at once useful and interesting. The photographs and charts showing the influence of foods containing vitamine in the feeding of pigs commanded attention. It was a pity that no "control" charts were exhibited in connection with those showing the results of some of the experiments.

Some of the exhibits of the Meteorological Office were again more suitable for display at the meetings of some scientific society rather than at a popular event like the Royal Show. And even some members of scientific societies might find their mathematical knowledge insufficient for the interpretation of the charts. Still some of these charts were useful, and some—notably the map of the British Isles showing dates of first and last killing frosts—ought to be published so that they would be accessible to agriculturists and teachers. Each year the Meteorological Office shows that it can collect data which would be of value to farmers, but it has not yet begun to take the trouble to provide such simple interpretations as would make the information useful to the people who need it.

To summarise, the Education Exhibit of 1921 was a useful and in some measure an interesting part of the Royal Show, but it was neither as interesting to visitors nor as useful to agriculturists as such an Exhibit could be made.

As in previous years, the exhibitors had the advantage of the stewardship of Mr. J. L. Luddington.

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### THE FORESTRY EXHIBITION AT THE DERBY SHOW, 1921.

THAT there is a greater general knowledge of Forestry, as well as an increasing interest in the subject, not only by owners of woods and those connected with the management of woods, but also by the general public, was plainly demonstrated at the Forestry Exhibition at the Royal Show at Derby, in the large and varied nature of the exhibits and in the attendance and keen interest shown by the visitors.

The bulk of the exhibits, more especially in the non-competitive classes, were staged in a large building, while the heavier and more bulky exhibits, such as Fencing, Gates, etc., were conspicuously arranged outside in close proximity to the main building. The whole exhibition was arranged in a pleasing and effective manner, showing the usual skilful management of the Stewards:—Mr. C. Coltman-Rogers and Mr. M. C. Duchesne.

A conspicuous and interesting feature of the Show, and one of considerable importance to British Forestry, was the varied and large number of exhibits demonstrating the uses of home-grown timber and other forest produce; and many of these exhibits vindicated the superior quality and appearance over the foreign article of some of our home-grown timbers for a great variety of purposes.

In the competitive classes, notably those for planks of English

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timber, there was a fine display of home-grown timber of excellent quality, and, as might be expected in a country where a comparatively large part of the woodland area is covered with Oak, and where the cultivation of Larch has perhaps received more attention than any other conifer, all the planks shown of these timbers were, without exception, of first-rate quality.

In the classes for gates some strong and useful farm gates were exhibited, but in some cases the iron-work or mountings were of a rather expensive character and of greater weight than is necessary for efficiency. The exhibitors in the gate classes, in accordance with the rules, must state in detail the cost of the gate and mountings. It is difficult to see that any useful purpose is served by this rule, especially as in many cases the figures given vary considerably for gates that are very similar with regard to class and size of material used, so that the figures are of little or no use to the Judge as a guide in arriving at his decisions. The question of economy, as well as efficiency, might very well be left to the Judge, without the aid of figures from the exhibitors, which are sometimes rather misleading.

*Class 1.* For specimens of Oak, Elm, Ash and Beech timber. Major J. A. Morrison gained the Silver Medal, and the Earl of Leicester the Bronze Medal.

*Class 2.* For specimens of Larch, Spruce and Scots Pine timber, Major J. A. Morrison gained the Silver Medal, and the Duke of Portland the Bronze Medal.

*Class 3.* Specimens of any other sort of hardwood or broad-leaved tree. The Earl of Leicester gained the Silver Medal with boards of Sycamore, Sweet Chestnut (*Quercus Ilex*), Cherry, Hornbeam, Acacia, Walnut, Turkey Oak, Holly, Black Italian Poplar, etc., and Major J. A. Morrison was awarded the Bronze Medal. The Duke of Portland's exhibit was highly commended.

*Class 4.* Specimens of any other sort of Coniferous Timber. The Earl of Leicester gained the Silver Medal with 11 varieties, including :—Corsican Pine, Silver Fir, *Pinus Coulteri*, Douglas Fir, Sitka Spruce, Cryptomeria, Yew, Cedar and Araucaria ; and Major Morrison gained the Bronze Medal with boards of Weymouth Pine, Douglas Fir, and Silver Fir.

*Class 6.* Specimens of panels or boards, or other articles of furniture, etc., from timber grown and manufactured on Exhibitor's Estate. The Earl of Leicester was awarded the Silver Medal for a fine collection of Home-grown Woods and specimens of furniture and other articles, including a Table and a Door made of Oak, Bedstead Frames of Sweet Chestnut and Ilex, Mantles of Ilex, and Brown Oak, etc.—altogether a most interesting exhibit.

*Class 7.* For the best Oak Field Gate for Farm use. Major

G. Miller Mundy gained the Silver Medal, and the Duke of Devonshire the Bronze Medal, while another gate shown by the Duke of Devonshire was highly commended.

*Class 8.* For the best Gate for Farm use of any other Home-grown Timber or combination of timbers. The Duke of Devonshire gained the Silver Medal, the Earl of Leicester the Bronze Medal; and a gate shown by the Duke of Rutland was highly commended.

*Class 9.* For the best Hunting Wicket (Self-closing). The Duke of Devonshire gained the Silver Medal, and Major G. Miller Mundy's and the Duke of Rutland's gates were highly commended.

*Class 10.* For a Tree Guard made principally of Home-grown Timber. The Earl of Leicester's exhibit was highly commended.

*Class 11.* Fencing of Home-grown Wood in not more than nine yard lengths. Several serviceable examples of pale, rail and combination rail and wire fencing were shown. A park paling fence of cleft Oak, exhibited by Sir Francis Burdett, and a 4-rail Bullock fence, shown by the Duke of Rutland, were highly commended.

*Class 12.* Fencing of Foreign Timber, creosoted or otherwise. Fences of Mortise rail, pale fences and nailed three and four-rail fences, etc., exhibited by English Bros., Ltd., Wisbech, and Richard Wade, Sons & Co., Ltd., Hull, were highly commended.

In the classes for exhibition only, the entries were very numerous, of a high standard of quality, and of great educational value. The exhibits were carefully and accurately named, and bore testimony to the knowledge of the exhibitors in their subject, and showed great care and skill in the neat and effective way they were mounted for exhibition. This latter feature is to be commended, as it adds considerably to the general appearance of the Forestry Show.

Besides the large assortment of Furniture, etc., made from Home-grown Wood, there were also some excellent exhibits of Injurious Insects and Fungi, along with specimens of trees and timber showing the damage caused by these Forest Pests.

Major J. A. Morrison, Basildon Park, Reading, was awarded a Silver Medal for a fine collection of articles made from Home-grown Woods, such as Furniture and Office Stationery Cabinets, made from Oak, Sweet Chestnut and other combination of timbers; Baskets made from Willows; Walking Sticks, etc. This exhibit also included a collection of Seedling and other plants, together with a model of a plantation of Scots Pine and Beech. Some of the articles were of high-class workmanship and created much interest, and in this respect particular note may be made of some antique Jugs made of dark brown Oak.

Major Morrison also gained the Special Medal of the Royal

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Agricultural Society of England for the best general collection of exhibits in the competitive and non-competitive sections.

The English Forestry Association was awarded a Silver Medal for a noteworthy exhibit showing the more important English timbers, some of their uses and rate of growth. An outstanding feature of this exhibit was the beautiful furniture made from English Elm, treated in some way and giving it an artificial but very pleasing appearance. Such exhibits as this should help to raise the standing of this somehow low-rated timber, which from the quantity of timber available, of large dimensions, is an important but hitherto not very valuable timber tree to landowners in the West and South Midlands. The exhibit by this Association, showing the manner of cleaving English Oak for barrel staves, shingles, spokes, etc., was both instructive and interesting, as was also the demonstration in the cleaving of Ash and Cricket Bat Willow, for the manufacture of sports articles.

The Forestry Commission had a very comprehensive and instructive exhibit, illustrating the cultivation of trees from the seed-bed to the mature timber, including Seedlings and Transplants of the more important timber trees, with typical examples of English timbers.

There were also a large number of Specimens showing Insect and Fungoid Forest Pests and their work, and the results of good and bad methods of pruning. Various classes of Forest Soils, with their surface growth and their suitability for different varieties of Forest Trees, were also shown and described. To complete this demonstration of Forestry, there were numerous Photographs, Maps, Data, etc., dealing with Forest Management, along with a collection of useful Forest Tools and Appliances.

The School of Forestry, University of Cambridge, had an interesting exhibit, consisting of a number of specimens illustrating the "Figure" of wood; and the Royal Botanic Gardens, Kew, exhibited hand specimens of English timber, tree seeds and photographs of trees.

Mr. H. R. Munro, Forester, Charborough Park, was awarded a Silver Medal for his neatly mounted collection of Fungi injurious to forest trees, and some of the chief forest insect pests and their work, including a case showing live specimens of the Pine Weevil with a system of bark traps used with great success at Charborough Park. There were also specimens showing the effects of proper methods of pruning and the destructive results of careless or bad pruning of trees, injuries to trees by forest weeds, and defects in timber. There was also an interesting specimen of the natural grafting of two Birch Trees, through the agency of honeysuckle, the stems being firmly bound together in the first place by this forest weed.

Messrs. Calders, Ltd., London, exhibited a model of an office, which showed to great advantage the superior quality and fine appearance of the interior of a room panelled with English Oak, part of the work being carried out with exceptionally fine Brown Oak. The floor-boards were also of English Oak, which gave the whole both a high-class and durable appearance. This firm also had a large display of sawn English timber for various classes of work, and Railway and Mining Timber; also sections showing the sizes and value of English timber at various ages, including:—Douglas Fir, Larch, Sitka Spruce, Ash and Poplar. The Poplar specimen illustrated the very rapid growth of this valuable timber tree. Much interest was shown in this exhibit, which was awarded a Silver Medal.

The Midland Railway Company showed a complete set of English Oak Wagon Scantlings, fixed in position along with specimens of various other articles of Home-grown Timber used by this Railway Company, such as:—Crossing Sleepers, Ash Sprags, Engine Buffer Plank, Fencing Timber, etc. This exhibit proved of great interest to many visitors, and derives considerable importance from the fact that large quantities of our best Oak are required for railway wagon building, the Railway Companies being our best customers for selected Oak. This exhibit was awarded a Silver Medal.

Messrs. Oates, Ltd., Worksop, were awarded a Bronze Medal for their splendid exhibit of all kinds of Tool Handles, etc., made solely of British timbers, such as:—Ash, Beech and Sweet Chestnut. There were a great variety of handles, including those used in agriculture and the engineering trades, and for railway, mining and domestic purposes. For excellence of quality and workmanship, as well as cost, these handles compare favourably with the foreign articles, such as American Hickory handles, with which they are successfully competing.

Mr. Wm. Craven Llewelyn, Swansea, was awarded a Bronze Medal for his fine collection of preserved specimens of the foliage, flowers and fruit of many different species of trees collected at home and abroad, some of the foreign species being very rare.

Messrs. H. J. Wigram & Co., Land Agents, Derby, were awarded a Bronze Medal for a carefully prepared and interesting collection of Forest Insect Pests, with bark and log traps for Pine Weevil and Pine Beetle, and a varied selection of English timbers, showing the particular class and size of timber used for a wide variety of purposes, such as Ash for the handle industry, timber for wheelwright work, Elm, Beech and Ash used in the manufacture of Windsor Chairs, etc. There was also a collection of Mining Timbers, showing the class and sizes of pit wood used for different positions and purposes in a coal mine.

The Earl of Yarborough was awarded a Bronze Medal for

his exhibit of Boards of no fewer than 106 varieties of home-grown timbers, undoubtedly a rare collection.

The Duke of Devonshire's exhibit of a number of fine Boards cut from old Oaks was very highly commended.

The Duke of Portland exhibited an excellent plank of Brown Oak, grown at Welbeck.

Mr. W. H. Bennett, Brackenburgh Tower Estate, staged an exhibit showing in a very practical manner the extraction, germination and sowing of tree seeds, which was very highly commended.

Mr. W. Paulgrave Ellmore, Leicester, had an interesting display of Willows used for all classes of basket-making, including various coloured rods, peeled and unpeeled, and graded for all classes of work. Included in this fine exhibit were also a number of up-to-date tools and appliances used in the cultivation and marketing of basket-making Willows. Most of these were of a labour-saving character, such as the peeling or stripping machines, and machines for tying the Willows into bundles, a special planting chain and a useful tool for grubbing up the roots or stumps of worn-out Willow stools.

Messrs. Christy & Penny, Ltd., London, exhibited the Wade Petrol-driven Portable Cross-Cut Saw with tree-felling attachment, and much interest was taken in the periodical demonstrations of the cross-cut saw at work on large logs, which it appeared to negotiate with ease.

Messrs. T. M. Gardiner, Ltd., Hoddesden, Herts, showed Ash and Willow for sports purposes, and Mr. S. Pegler, Retford, showed in myrioscope fifty coloured photographs of Thoresby Woodlands.

Messrs. Pfeiffer had also entered a petrol-driven, portable cross-cut saw. Notice had been received that, owing to non-delivery from the docks, this machine would not be exhibited. However, at the last moment, one machine arrived upon the opening day of the Show, and although too late for an inspection by the Judge, it attracted very favourable notice from many of the visitors to the Show. We hope next year to have an opportunity of giving this invention further attention.

Mr. John Patten, Junr., Alnwick, exhibited some beautiful colour drawings of fruits and flowers of some British Forest Trees, the drawings showing the variation in colour, size and shape of the fruit at different months of the year.

Mr. C. Coltman-Rogers, Stanage Park, had a small exhibit of the leaves and cones of the following newly-introduced giant trees from Formosa :—

	Height.	Girth.	Altitude.
<i>Cupressus formosensis</i> .	105 ft.	65 ft.	8,500 ft.
<i>Taiwania Cryptomerioides</i> .	160 ,,	20 ,,	8,000 ,
<i>Cupressus obtusa</i> .	130 ,,	20 ,,	—
<i>Cunninghamia Konishii</i> .	150 ,,	20 ,,	—

The success of the Forestry Exhibition at Derby in these difficult times, and in spite of high railway rates, may be taken as a good omen for the future, and it must also be a source of satisfaction to the promoters of the Forestry section of the Royal Show.

J. B. BRAID.

Himley, Dudley.

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REPORT OF THE JUDGES ON THE  
PLANTATIONS AND ESTATE NURSERIES  
COMPETITIONS, 1921.

THE competition this year was confined to the counties of Derby, Notts, Lincoln and Northants, the total number of entries in all the classes for competition being 61. This entailed a visit to 18 estates, the county of Lincoln contributing 29 entries, Derby 17, Notts 12 and Northants 3. The entries from Derbyshire were mainly situated on the N.W. portion of that county, a well-wooded district. Those from Nottingham were chiefly from the Dukeries district and those from Lincoln from the northern part of the Wold district; being on the whole a very creditable entry and quite up to the average of the competitions of former years. A good deal of the area had not been eligible in former competitions.

Our awards were given as follows:—

Class 1. Stage A.—Hardwoods as final crops, not less than 4 acres in extent, lightly thinned and not less than 10 years' growth. This class, which at previous competitions had been poorly patronised, had no less than ten entries, most of which were of considerable merit. The First Prize was awarded to the Duke of Portland, Welbeck Estate, for the Gringley Fox Covert, area  $7\frac{1}{2}$  acres, 12 years old, aspect south, elevation 240 ft., soil heavy loam, the crop being nearly pure ash with a few Norway spruce and larch (not 10 per cent.) planted for covert. The latter is being gradually suppressed by the ash, which is very clean grown and has every prospect of making a first-class hardwood plantation; before being planted this was a fox covert only. The trees now stand about 6 ft. apart, no replanting has been necessary, their average height is 18-24 ft. and average girth, at 5 ft., 8 in. The ash when planted out were 3 to  $3\frac{1}{2}$  ft. in height and on suitable soil for this hardwood have made capital clean growth without being nursed by conifers. The cost of planting is given at £11 15s. per acre, pit planting, not including cost of wire netting.

The cost of cleaning for the first four years after planting was £8 8s. for the whole area. The rainfall for this district

averages 24 in. per annum. Part of the wood had been slightly thinned before our visit and the remainder would be gone over in the autumn. A good canopy is maintained, and the result shown throughout is of a very promising crop of valuable hardwood in the future.

The Second Prize was awarded to the Earl of Yarborough Brocklesby Park, Lincoln, for his plantation situated at Claxby Wood, near Market Rasen. The area of the plantation is 16 acres, its age now 13 to 14 years, and it is planted on the site of an old hardwood plantation, the aspect being very much exposed to the west on a steep hill-side of elevation 150-350 ft. The nature of the soil is a clayey loam. The trees, which are 50 per cent. hardwood and 50 per cent. conifers, were planted 4 ft apart by holing and were grown in the Home Nurseries, being one-year seedlings, two years transplanted, in the case of the hardwoods, and the conifers two years, two years transplanted

The annual cost of cleaning the plantation for the first four years was about 20s. per acre, no replanting being necessary. The hardwoods have grown exceedingly well and are practically suppressing all the conifer nurses. They consist of black Italian poplar, growing to a height of 26 ft. with a circumference of 15 in., and of sycamore, which is very clean-stemmed, of a height up to 22 ft. with a girth of 12 in. The plantation has been slightly thinned, all suppressed trees being removed and the hardwoods being pruned at the same time, the material taken out having paid for the labour.

The Reserve Prize was given to the Sheepbridge Coal & Iron Company for their entry of the N.E. portion of Carr Wood, near Glapwell, of 4½ acres, the trees being pit planted 4 ft apart. The hardwoods consist chiefly of ash, which has made excellent growth, and also of beech on the higher slopes.

Highly Commended was given to the Duke of Portland for Gleadthorpe Plantation, and Commended to the Earl of Yarborough for Goosehills Plantation.

We may state that, on the whole, very little damage was being done in these young plantations by disease or insect pests; but ground game, which is referred to elsewhere, has in some cases caused a great deal of damage to the growing hardwoods, even where wire netting has been put up for protection.

Class 2. Hardwoods. Stage B.—In this class there were four entries, the ages of which ranged from 13 to 28 years. This is the most critical period in the life of a hardwood crop, for we are of the opinion that a great deal of the ultimate success of mature hardwoods depends upon the successful management of the crop during the first 30 years' growth.

The First Prize in this class was won by the Earl of Yarborough for Broadlands Plantation, on the Manby Estate. This plantation

has an area of  $9\frac{3}{4}$  acres, is at an elevation of 50 ft. above sea-level, and was planted 24 years ago on land which had previously carried a crop of oak and other hardwoods, the ground being replanted the winter following the clearance. The soil is loam, and the site of the plantation is open on all sides. It was planted with 50 per cent. larch and 50 per cent. hardwoods, the latter being chiefly ash, sycamore and beech. During the thinnings the larch have nearly all been taken out, and a good foundation is now laid for a successful hardwood plantation, the average heights of the trees being 28-30 ft. and their girth 18-20 in. The plants were all potted 4 ft. apart, and were one-year seedlings and two and three years transplanted in the Home Nursery. No insect pests have been noticed and any diseased larch were removed when thinning.

The Second Prize was awarded to the Duke of Portland for Manor Wood, a plantation 14 years old and 17 acres in extent, the soil being a sandy loam on red sandstone, aspect west. It was planted with two-year two-year oak, beech, larch and Scots pine in about equal proportions. Rabbits had in some cases caused damage to the hardwoods, but the beech particularly showed remarkable good clean growth and should be the best tree for the soil and position. The larch and Scots pine will be gradually thinned out. *Chermes* was prevalent on the larch in places.

The Reserve in this class was awarded to the Earl of Yarborough for a very promising hardwood plantation named Melton Gallows,  $18\frac{1}{2}$  acres in extent, planted 28 years ago with one-third hardwoods and two-thirds conifers on ground previously bearing a good hardwood crop.

Class 3. Stage A.—Conifers to be not less than 4 acres in extent. Fourteen entries. This was a very strong class. The elevation ranged from 60 ft. on the Hon. C. J. F. Winn's plantation in Lincolnshire to 1,000 ft. in the Derwent Valley Water Board's plantation in Derbyshire.

The First Prize in this class was awarded to the Duke of Devonshire's plantation situated on Lees Moor, Chatsworth Estate, being 5 acres in extent, at an elevation of 900-950 ft., on soil consisting of thin sand on grit. The rainfall is about 32 in. This plantation was planted in 1902 with 50 per cent. Scots pine, 25 per cent. larch and 25 per cent. beech, the conifers being notched in, and the beech in holes made with a mattock. This is the common method of planting in that part of Derbyshire on the steep slopes of the hills, the turf being brought forward to the bottom side of the pit, which is then stacked up with the mattock. When the tree is inserted the pit will retain all moisture. The cost of plants and labour at the time of planting, using two-year seedlings, two years transplanted, was estimated

at £6 per acre; not including fencing. This plantation had been slightly thinned this spring, and on the whole there have been very good growths, considering the exposure. It has been subject to very little disease or discernable insect pests, but rabbits have been troublesome. [The section adjoining this was awarded Reserve and is a very promising plantation of 1½ acres, the larch predominating in most cases over the Scots pine.

The Second Prize we awarded to the Derwent Valley Water Board, Bamford, Derbyshire, for Handcoch Plantation, situated on a very steep hillside on the east side of the Derwent Valley Reservoir. We may state that this was one of several plantations entered for competition by the Board, who have, and it is hoped will continue, a very successful scheme of afforestation under the management of their capable engineer, Mr. Winser. The total area at present planted amounts to 320 acres, and it is intended to carry on the afforestation of a good deal more of the land on the hillsides adjoining the Reservoirs. As in many other parts of Derbyshire, spring frosts do a certain amount of damage and cause, no doubt, an increase of *cherries* on the larch. Handcoch Plantation is 12½ acres in area, the crop being chiefly Scots pine, planted on sandy soil having a bleak westerly exposure. The method of planting was by peeling off the turf and loosening the soil to a depth of 8 in.: the trees are planted 3 ft. apart, their age being two-years two-years when planted. The cost of planting was £10 13s. per acre, no clearing being required after planting and practically no replanting being necessary. No signs of any kind of pests were noticed in this plantation. The high cost of planting this area is due to the fact that it is so far from villages, consequently labour is very difficult to obtain and the usual wage is 1s. 4d. per hour, but where possible the holes were made by contract work. The trees used in planting were practically all grown in the Board's own Nursery on the estate.

Highly Commended in this class was awarded to J. B. Marsden Smedley, Esq., Lea Green, Matlock, for Cockhill Plantation, and also to the Hon. C. J. F. Winn for a section of Appleby Plantation. Commendeds were awarded to Earl Manvers for Roberts Plantation and Captain E. W. S. Foljambe for Birch Holt Plantation.

Class 4.—Conifers as a final crop. There were seven entries in this class, the First Prize being awarded to Earl Manvers, Thoresby Park, Notts, for a very fine plantation, Seymour's Grove, situated at the west of Edwinstowe-Worksop Road, area of wood 41 acres, age 32 years, soil of a sandy nature on gravel subsoil, aspect N.E., elevation about 220 ft. The trees were potted at 3 ft. apart, the cost per acre, including two-year

two-year plants and wire netting, amounting to £8 12s., the annual cost of cleaning for the first four years amounting to £10 for the whole area. The crop now consists of fully 50 per cent. larch and 25 per cent. Corsican pine, the remainder being Scots pine, Norway spruce and a few hardwoods. The larch average about 42 ft. in height and girth up to 32 in. at 5 ft. up. The Corsican pine are slightly taller and of better girth, and we estimate the plantation to average about 560 trees per acre with a total cubical content of 2,820 cubic ft. per acre, T.O.B. This wood has been thinned twice previously to this year and, no doubt, like many others all over the country, has suffered from want of labour during the war period. Previous to the judges going over it, the forester gave permission to the villagers to remove all the dead branches and dead trees from the plantation, which gave it a far better appearance than it would have probably had if there had not been a coal strike. If the demand for pitwood had continued after the war, this plantation would have been the next on the estate to be felled. Would that there were many more plantations in the country saved from the axe as there are far too few similar ones to be seen at the present time.

The Second Prize was awarded to the Duke of Portland for Haddon Pastures, age 28 years, grown on similar soil and under identical conditions to the previous wood at Thoresby Park. The Corsican pine predominate over all the other conifers and show remarkable growth for their age.

The Earl of Yarborough's Roxton Wood was placed Reserve, and the same nobleman's Wilson's Quarter was commended, as was also Earl Manvers' plantation, Mary's Gorse.

Class 5.—Best example showing systematic management of existing woodland area including the renovation and conversion of an unprofitable wood into a profitable condition. Two entries.

The judges awarded Highly Commended to Sir Francis Bennett for Fair Holt Woods and Commended to F. C. Arkwright, Esq., for Birch Wood.

*Note.*—There seems to have been a general misapprehension as to the condition of the entry, and we think that many more owners might have entered; for example, all old woods that have been filled up or coppice with standards which are being improved, are eligible, and also other improvements in existing woodlands.

Class 6.—Plantation of not less than 2 acres consisting of Douglas fir, Sitka spruce, Japanese larch, Corsican pine, or any other rare conifer, pure or mixed, of not less than 5 or more than 30 years' growth. This class drew 15 entries, the First Prize being awarded to the Duke of Portland's plantation at Manor

Wood, consisting of a section about  $3\frac{1}{4}$  acres in extent, planted with pure Corsican pine on a poor white, sandy soil on sand and gravel subsoil. The trees were pitted about 4 ft. apart, the age of the plants being two-year seedlings one-year transplanted. This plantation is only 11 years old and shows remarkable growth, especially in the last few years ; the soil seems to have a puffed appearance, and when planting a large turf was taken off and soil removed so that a good space was left clean round the trees. It is doubtful if on soil of this poor nature any other variety of tree would have succeeded so well as the Corsican pine.

The Second Prize we awarded to one of the best Japanese larch plantations we have yet met with, the property of R. X. Sutton Nelthorpe, Esq., situated in Seawby New Forest, near Brigg, Lincolnshire. The area is  $2\frac{1}{2}$  acres, and it is fairly well sheltered by older woods, except on the west side, where the timber had recently been cut. The elevation above sea-level is 75 ft. The soil is of a very sandy nature and the trees were pit planted 4 ft. apart, which, on this class of soil, does not come very expensive. The plantation is now 17 years old and has been slightly thinned. The trees stand very regularly and average about 720 trees per acre, average height 28 ft., circumference at 5 ft., 12 inches. No signs of disease or insect pest was found in this section, though on some of the young native larch plantations on this estate *cherries* and late frosts had injured the trees in their younger stages and larch canker was more or less prevalent in the older plantations. We awarded Reserve in this class to the Derwent Valley Water Board for their Japanese larch section in Chapel Plantation, adjoining the top Reservoir, a very promising crop but slightly attacked by *cherries*.

A Commended was also awarded to the Earl of Yarborough for his entry, Brompton Dale Plantation, a very promising young wood.

Class 7.—Best managed Woodland Estate not less than 1,000 acres in extent, the judges to take into account the production of timber, ornamental planting for sporting purposes and improvement of residential amenities, and proper management of hedge-row timber.

There were six entries in this class and the judges had no hesitation in awarding the premier honours to the Earl of Yarborough, Brocklesby Park Estate, Lincoln. The total area of woodland on this estate amounts to 3,360 acres, and great credit for this large amount of woodland is due not only to the present owner and Mr. Havelock, his woods manager, but to those who have long passed away, leaving a standing memorial of their work at the present day. Besides supplying the nation at a time when home-grown timber was badly needed for war purposes with nearly every variety of timber that was required (and judging by

what we saw some of the finest aeroplane ash was supplied from this estate), at the present time a large quantity of very promising timber is still developing in the woods. Lincolnshire seems to have a soil and climate suited for the growth of the ash tree, and it is no doubt the best commercial tree to plant on ground adapted for it. The woodlands planted during the last thirty years under the supervision of Mr. Havelock are so extensive and thriving that one does not notice the gaps caused by cutting; indeed we doubt whether the judicious planting of the estate for the past 100 years or so has been equalled by any other in England. The market on this estate for thinnings is excellent, especially for larch poles of all sizes, which are greatly in demand in Grimsby and other neighbouring towns.

Japanese and *Larix Occidentalis* were frequently met with in experimental areas, the former doing well and the latter making certainly slower growth and weaker stems than either the native or Japanese, and we cannot recommend it being planted as a commercial tree in this country. There are so many outstanding features of forestry, both commercial and ornamental, on the Brocklesby Estate, that it would entail a considerable amount of writing to do full justice to the woodlands, and we trust that in future, as in the past, Arboriculture will remain one of the chief features of this estate.

The Second Prize was awarded in this class to Lady Beryl Gilbert, Revesby Abbey, Horncastle. The estate has an area of 7,000 acres, 800 of which are composed of woods and plantations. It was formerly the residence of Sir Joseph Banks, the great traveller, and later of the Stanhope family, and has been judiciously laid out with trees of many varieties. The grounds contain some very fine specimens of ornamental trees that are rarely met with in other places. In the pleasure grounds we came across a very fine specimen of field maple 11 ft. in girth, a very fine *Quercus rubra*, over 40 ft. high, also two of the finest specimens of weeping beech in existence. Amongst other fir trees were specimens of *Cedrus Atlantica*, *Libocedrus decurrens*, *Pinus alba*, var. *Albertiana*, *Populus lasiocarpa*, *Pinus leucodermis*, *Ailanthus glandulosa*, etc. A feature of the grounds and the park is the judicious planting of copper beech, flowering thorns and crabs amongst the timber trees.

The woodlands on the estate are nearly all hardwoods; the largest, Foulsty Wood, is 247 acres, consisting of oak standards with underwood. It was planted about 120 years ago, the underwood consisting of ash, hazel and maple. A good demand exists for this class of underwood, especially for big poles for fencing purposes. The underwood is cut in sections at about 20 years old and is all disposed of in the locality at good prices. Low Grounds Wood, age 70 to 75 years, area 44 acres, is an excel-

lent crop of nearly matured oak and ash of good quality. The hedgerow timber on the estate is standing very close together, and we advised the owner to have some of it, especially the ill-formed trees, cut out, as the hedgerows contain a great deal more timber than is necessary both for the good of the hedges and of the arable land.

The Third Prize was awarded to H. L. C. Brassey, Esq., M.P., Apethorpe Estate, Northamptonshire. On this estate we saw some very promising plantations. Most of the older woods we understand have been taken over by the Forestry Authorities for the purpose of reafforestation, but these we did not see.

We would add a few remarks as to one entry in this competition, Major Walter Rawnsley's Well Vale Estate, Alford, Lincolnshire. This estate has great possibilities for timber production; the woodlands on the estate seem to have been much neglected in the past, and in our opinion a considerable amount of matured timber should be cut and sold. In Well Valley Wood several areas of larch and spruce are mixed with ash which are up to 50 ft. high; judicious thinning is required, leaving generally the ash, which here shows great promise, though ground game seems to have been very troublesome. The young plantations which we saw give every promise, and the estate seems well laid out for both woodland and sporting purposes. There seems a good demand for poles.

There were three entries in the Nurseries Competition.

The First Prize was awarded to the Derwent Valley Water Board, and is situated at the foot of their lower Reservoir at an elevation of about 680 ft. The area of the two nurseries, which adjoin each other, is about 3½ acres.

The nurseries are permanent and, although at so high an altitude, are sometimes affected by spring frosts, being near the water overflow from the reservoir above, but there does not seem to be any other suitable piece of land for nursery on the estate. Two-thirds of the land was under plants in all sizes, from the seedlings just coming through the ground to forest trees ready to plant out next autumn, only a few ornamental trees being planted for scenic effect along the banks of the reservoirs and the roadsides. One-third of the nursery is cropped annually, chiefly with potatoes and turnips. The soil is a good sandy loam and well adapted for growing good fibrous roots. This year's seed-beds consisted of oak and beech sown April 7, which had germinated well. Japanese larch a capital bed. The one-year seedlings which had germinated and grown well consisted of Japanese and Tyrolean larch, Scots pine; a quantity of one-year seedlings, one-year transplanted larch and Scots pine, and two-year, one-year transplanted, of different varieties of trees suitable for planting out in the area, were growing well. The

plants were given sufficient room between the rows, being 15 to 18 in. apart for the purpose of using the wheel-hoe for cleaning, and about 3 in. between plants.

The Second Prize was awarded to the Earl of Yarborough for the nurseries on the Brocklesby Estate. These were three in number,  $5\frac{1}{2}$  acres in extent. The larger one of 4 acres is situated near Mr. Havelock's house, and has been an estate nursery for probably 100 years, and its continued fertility may be owing to the constant use of leaf mould and wood ashes and also the application of farmyard manure to the alternating green crops, about one-third being under the latter. The nursery contained about 150,000 transplanted forest trees in all stages of growth, from one-year seedlings upward, and also a very large and varied collection of Chinese conifers and flowering shrubs, and hollies raised from home-grown seed. A forest nursery area, 2 roods 23 poles, situated at Hendale, contained about 52,000 transplanted forest trees, a similar one situated at Gooschill, of  $\frac{1}{4}$  acre, containing about 61,000, chiefly two-year seedlings transplanted this year.

The Third Prize was also awarded to the Earl of Yarborough for his nurseries on the Manby Estate, which consist of one permanent nursery, Old Camp,  $5\frac{1}{4}$  acres, and four other temporary nurseries, area about 3 acres, the total number of transplanted trees in the whole nurseries approaching nearly a million. Where the larch seedlings had been planted during wet weather on the heavy portion of Old Camp nursery many failures were noticed, but some very well-grown beech and ash were growing. In the temporary nurseries the soil was of a light nature and the seedlings were growing well, in some instances the chief damage being caused by late spring frosts, which are generally bad in that district.

The Gold Medal given by the Royal English Arboricultural Society for the best plantation was awarded to the Earl of Yarborough, Brocklesby Park, Lincoln, for his Broadlands Plantation, on the Manby Estate. This is an exceptionally fine example of what a hardwood plantation should be, and reflects great credit on the management from planting to date.

Earl Manvers' Seymours' Grove Plantation was the Reserve for the Gold Medal, and this plantation was considered the best soft wood plantation seen on our tour.

The outstanding features of our inspection were:—

1. The great damage done to plantations by ground game. If we had our way we would probably hang one gamekeeper yearly at the four cross-roads, with a legend stating that his execution was intended as a warning to others to keep the ground game within decent limits. If this failed to have the proper effect we would hang an agent in the same way, and if this proved

ineffective we would hang an owner ; indeed, we are not sure that the owner ought not to be the first example, for the last word rests with him, and he knows, or ought to know, what is going on. These are not times when it is either right or policy to allow damage for the sake of sport : more than this, on the majority of estates where ground game damage is done the rabbit is no good for sport to the owner and only provides sport for the keeper and suchlike.

2. The great effect the system of forestry on the large estate has had on the smaller. Big woodland owners should therefore mind their ways and remember that their methods are copied.

3. That the only conifers worth planting are : European larch, spruce, Scots pine, Douglas fir, Corsican pine, Sitka spruce, and, possibly, Japanese larch. It is doubtful if the remainder are of commercial value, though it is desirable and right that they should be planted in small areas, experimentally.

4. That in frost holes Scots pine is the only coniferous wood to plant.

The judges wish to thank Mr. Coltman-Rogers and Mr. Marsden Smedley for the splendid arrangements which were made for their tour, which worked without a hitch from start to finish, so saving them much time ; and also they wish to thank all land-owners and their representatives for the hospitality they received and for a very pleasant fortnight's work.

ARTHUR ARNOLD.  
ALEXANDER SLATER.

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REPORT OF THE COUNCIL TO THE  
ANNUAL GENERAL MEETING OF GOVERNORS  
AND MEMBERS OF THE SOCIETY,

TO BE HELD AT THE

ROYAL AGRICULTURAL HALL, ISLINGTON, LONDON, N.

*On WEDNESDAY, December 7, 1921, at 2.30 p.m.*

**Membership.**

1. The Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 8th, 1920 : 55 new Governors (including 10 transferred from the list of Members under By-law 7), and 1663 new Members have joined the Society, and 2 Members have been re-instated under By-law 14 ; whilst the deaths of 4 Life Governors, 9 Governors, 1 Honorary Member, 78 Life Members, and 187 Members have been reported. 2 Governors and 35 Members have been struck off

the books under By-law 12, owing to absence of addresses ; 2 Governors and 70 Members under By-law 13, for arrears of subscription ; and 4 Governors and 201 Annual Members have resigned.

**Deaths of Governors and Members.**

2. It is with deep regret that the Council have to record that since the last Annual Meeting they have suffered the loss by death of three of their number, in Sir John Thursby, Bart., one of the representatives of Lancashire since 1916, Lord Ransborough, C.B., C.V.O., who for twelve years had represented the Division of Rutland, and the Hon. John E. Cross, who had been one of the representatives for Cheshire since 1909. Mr. Cross became a Steward of Implements in 1910, when the Show took place at Liverpool, and, until the present year, he had acted in a similar capacity at each succeeding show.

3. Amongst other Governors and Members whose loss by death the Society has to deplore are Earl Brownlow, G.C.V.O. (Governor), The Earl of Ducie, G.C.V.O., The Earl of Shrewsbury and Talbot, Lord Burghclere (Governor), Lord Balfour of Burleigh, K.T., Lord Reay, K.T., Lord Herbert Vane-Tempest, K.C.V.O. (Governor), The Hon. E. B. Portman, The Right Hon. W. Burdett-Coutts, M.P., The Right Hon. Sir Ernest Cassel, G.C.B., G.C.M.G., G.C.V.O., Major Sir E. F. Coates, Bart., M.P., Sir Bernard Oppenheimer, Bart. (Life Governor), Sir James Pender, Bart., Sir Joseph Savory, Bart., Sir O. H. P. Scourfield, Bart., Sir G. F. Sleight, Bart., Sir Joseph Verdin, Bart., Sir T. E. Watson, Bart., Sir E. Channing Wills, Bart., Sir George Collard, Sir A. H. Dixon, Sir John J. Oddy, Sir George J. Smith, Mr. W. Forrester Addie, Mr. Geo. Allison, Mr. F. R. G. Hervey Bathurst, Mr. A. S. Berry, Mr. W. W. Bourne, Mr. Robert Bruce, Mr. Joseph Carson, Mr. E. J. Cheney, C.B., Mr. A. Crewdson, Mr. A. Crewdson, junr., Mr. Alexander Cross, Mr. Sam Darling, Mons. E. de Monicault, Mr. Gervase Elwes, Mr. A. H. Fernihough, Mr. W. H. Fox (Governor), Mr. H. M. Gray (Governor), Mr. Thomas Gunning, Mr. John Capel Hanbury (Life Governor), Mr. J. E. Haworth, Mr. C. W. Kellock (Life Governor), Mr. John Kendrick, Mr. J. G. Mair-Rumley (Governor), Mr. George Marshall, Mr. William Nocton, Mr. Isaac Rawes, Mr. J. Symonds, Capt. A. H. Tarleton, M.V.O., R.N. (Life Governor), Mr. John Tompkins, Mr. J. E. Weaver, Hon. James Wilson, LL.D. (Hon. Member), and Vice-Admiral William Wilson.

**Number of Governors and Members on Register.**

4. The above, and other changes, bring the total number of Governors and Members now on the Register to 12,918, divided as follows :—

274 Annual Governors ;  
 134 Life Governors ;  
 10,103 Annual Members ;  
 2,383 Life Members ;  
 24 Honorary Members ;

12,918 Total number of Governors and Members, as against a total of 11,801 on the Register at the time of the last Annual Report.

The Membership since 1905 (with only two exceptions, during the war years) has shown a steady annual increase, until the Society has now a list of subscribers larger than it has ever before possessed.

**Presidency.**

5. The Council beg to report that H.R.H. The Duke of York, K.G., has signified his willingness to allow his name to be put forward at the forthcoming General Meeting for election as President of the Society, to hold office until the next ensuing Annual General Meeting.

**Changes in the Council.**

6. During the year the following have been elected to fill vacancies on the Council :—Sir Merrik R. Burrell, Bart. (Sussex), Mr. T. B. Silcock (Lancashire), and Mr. E. Guy Fenwick (Rutland).

**Annual Election of Council.**

7. The Members of Council who retire by rotation at the forthcoming Annual Meeting are those representing the electoral districts of Group "C," viz., Berkshire, Cambridgeshire, Cumberland, Glamorgan, Gloucestershire, Huntingdonshire, Kent, Lincolnshire, Oxfordshire, Somerset, Sussex, Warwickshire, Westmorland, Yorkshire—East Riding, Ireland and North Wales. Governors and Members resident in those districts have been communicated with, and the usual steps are being taken for the election or re-election of representatives for the Divisions concerned. Elections are also taking place in Derbyshire and Norfolk—each of which Divisions is now entitled under By-law 83, by virtue of increased membership, to elect an additional representative—and in the Division of Cheshire, where a vacancy has been created by the death of the Hon. J. E. Cross.

**Honorary Life Membership.**

8. On his retirement from the Secretaryship in March last, the Council elected Mr. Thomas McRow as an Honorary Life Member of the Society.

**Appointment of Secretary.**

9. To fill the vacant position of Secretary, the Council, in February, selected, from 181 applicants, Mr. Thomas Blundell

Turner, who was secretary of the Peterborough Agricultural Society and of the Peterborough Branch of the National Farmers' Union.

**Accounts.**

10. The Balance-sheet has to be presented, in compliance with the by-laws, for consideration at the Annual Meeting. The Council therefore beg to submit the Balance-sheet for the year 1920, with the Statement of Ordinary Income and Expenditure. These accounts were published in Vol. 81 of the *Journal* issued to members this year, having been duly examined and certified as correct by the Auditors appointed by the members and by the professional Accountants employed by the Society.

**The Derby Show.**

11. Honoured with a visit by His Majesty the King, and favoured with ideal weather throughout the whole of the five days it was open, the Society's Eightieth Annual Exhibition, which took place at Derby from June 28 to July 2, was a brilliant success; although the occurrence of foot and mouth disease in the Midlands and the disturbed condition of affairs in the industrial world caused the Honorary Director and the Council a great deal of anxiety in the later stages of the preparations. Generous contributions from the Local Committee and the various Breed Societies enabled the Council to offer a record prize-list, amounting to upwards of £13,000. Exhibits in the cattle and sheep sections were more numerous than at any show since that held at Shrewsbury in 1914, while the entries of pigs established another new record. In the Implement department there were several more stands than last year, although the total amount of shedding applied for was slightly less.

12. The attendance figures registered at the turnstiles for the whole of the show were 125,828, which, bearing in mind all the circumstances, cannot but be regarded as highly satisfactory. The accounts as passed by the Auditors and professional Accountants will not be available until the Annual Meeting, but it is anticipated that there will be a credit balance of £7,621, after allowing for a special contribution of £2,000 to the Darlington Local Fund for the 1920 Show. This result, to a great extent, may be attributed to the adoption of the recommendations made by the Special Committee appointed last year after the Darlington Show.

13. The Society is deeply indebted to the Mayor of Derby (Dr. Laurie), to the Corporation, and to the Local Committee, who, with the County people, worked whole-heartedly in the interests of the Show, and it must be a source of great gratification to them, as it is to all members of the Society, that their efforts were crowned with such a large measure of success.

**Report on Miscellaneous Implements.**

14. The entries this year for competition for the Society's Silver Medal for "new implements" numbered 64. Of these eight did not appear at the Show or were withdrawn, leaving 56 to be judged. Six medals were awarded. The report of the Judges has been published in pamphlet form, and may be obtained on application at One Shilling per copy.

**Next Year's Show at Cambridge.**

15. The Eighty-first Annual Exhibition of the Society will take place at Cambridge from Tuesday, July 4, to Saturday, July 8, next year. Situated about a mile and a quarter from the town, and easy of access, the site of the showground lies between Trumpington Road, Long Road, and the lines of the L. & N.W. and G.E. Railways. Being comparatively square, it will form a very compact Yard. The main entrances will be in Trumpington Road and the machinery and stock gates may be in Newton Road. Members of the Society travelling by rail via Cambridge will recognise the site from the fact that some of the buildings have already been erected, and there is a large notice board alongside the railway line announcing the dates upon which the show will be held on the site.

**Prize List.**

16. The date for the closing of the Stock entries is May 1st. Offers of Champion and other prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Suffolk Horse Society, British Percheron Horse Society, Hunters' Improvement and National Light Horse Breeding Society, National Pony Society, Hackney Horse Society, Welsh Pony and Cob Society, Shetland Pony Stud Book Society, Shorthorn Society, Dairy Shorthorn Association, Lincolnshire Red Shorthorn Association, Hereford Herd Book Society, South Devon Herd Book Society, Sussex Herd Book Society, Welsh Black Cattle Society, Red Poll Cattle Society, Aberdeen Angus Cattle Society, English Aberdeen Angus Cattle Association, Park Cattle Society, English Jersey Cattle Society, English Kerry and Dexter Cattle Society, Blue Albion Cattle Society, British Goat Society, Oxford Down Sheep Breeders' Association, Shropshire Sheep Breeders' Association, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Dorset Down Sheep Breeders' Association, Dorset Horn Sheep Breeders' Association, Ryeland Flock Book Society, Lincoln Long-wool Sheep Breeders' Association, Society of Border Leicester Sheep Breeders, Leicester Sheep Breeders' Association, Kent or Romney Marsh Sheep Breeders' Association, Cotswold Sheep Society, Exmoor Horn Sheep Breeders' Society, Cheviot Sheep Society,

Black Welsh Mountain Sheep Breeders' Association, English Blackface Sheep Society, National Pig Breeders' Association, Large Black Pig Society, Gloucestershire Old Spots Pig Society, Lincolnshire Curly Coated Pig Breeders' Association, Wessex Saddleback Pig Society, Essex Pig Society.

Challenge Cups are again offered for the best Suffolk Stallion, for the best Percheron Stallion, for the best Percheron Mare or Filly, for the best Two-year-old Percheron Stallion, for the best Two-year-old Percheron Filly, for the best Riding Hunter, for the best Hack or Riding Pony, for the best Single Harness Horse, for the best pair of Harness Horses, for the best Tandem, for the best Four-in-Hand Team, for the best group of Dairy Shorthorns, for the best animal in the South Devon Classes, for the best Longhorn Bull or Cow, for the best Kerry animal, for the best Dexter animal, for the best exhibit of Oxford Down Sheep, for the best exhibit of Shropshire Sheep, for the best exhibit of Ryeland Sheep, for the best Border Leicester Ram or Ewe, for the best group of Kent or Romney Marsh Sheep, for the best Large White Pig, for the best Middle White Pig, for the best Tamworth Pig, for the best Berkshire Pig, for the most points awarded in a combination of entries in the Berkshire Pig Classes, for the best Large Black Sow, for the best Gloucestershire Old Spot, best Gloucestershire Old Spot Boar, best Gloucestershire Old Spot Sow, for the best Wessex Saddleback Pig.

In the Poultry section Special and other Prizes are being contributed by the Dorking Club, Sussex Poultry Club, White Wyandotte Club, Columbian Wyandotte Club, Buff Orpington Club, White Orpington Club, Black Orpington Club, Indian Game Club, British Rhode Island Red Club, Blue Leghorn Club, Russian Orloff Club, Sicilian Buttercup Club, Barred Plymouth Rock Club, Buff Plymouth Rock Club, Indian Runner Duck Club.

In the Rabbit section Special and other Prizes are being contributed by the National Belgian Hare Club, National Flemish Giant Rabbit Club, National English Rabbit Club, Dutch Rabbit Club, Universal Angora Rabbit Club, Beveren Club, National Silver Rabbit Club, National Polish Rabbit Club.

**Shows of 1923, 1924 and 1925.**

17. In the year 1923, the Society will hold its Annual Show, for the fifth time, in Newcastle-upon-Tyne. The site selected is situated on the Town Moor, where the shows of 1887 and 1908 took place. Leicester will be visited in 1924, and Chester in 1925.

**Agricultural Shows and Entertainments Tax.**

18. At the request of a meeting of representatives of agricultural and kindred societies convened by the Royal Lancashire Agricultural Society on the 9th December last, the Royal

Agricultural Society of England took steps to arrange for a deputation to wait upon the Chancellor of the Exchequer with reference to the imposition of Entertainments Tax at Agricultural Shows. The interview, which, to suit the convenience of the Chancellor, had to be arranged at short notice, took place on February 17, when there was also present a deputation representing associations connected with trade exhibitions. The case for Agricultural Shows was put to Mr. Chamberlain by several speakers, but he could hold out no hope of any further modifications being made in favour of these shows.

[The Royal Agricultural Society, having no band or taxable "side shows" at its annual exhibitions, has been, however, granted exemption.]

#### **Judges at Argentine Show.**

19. The six gentlemen whose names appear below were this year selected by the Council, at the request of the Rural Society of Argentina, to officiate as Judges of Stock at the Palermo Show held in September last:—

*Shorthorns*.—Mr. W. S. McWilliam, Garbity, Orton Station, Elgin.  
*Hersford Cattle and Shire Horses*.—Mr. William Smith, The Leen, Pembridge S.O.

*Aberdeen-Angus Cattle and Clydesdale Horses*.—Dr. L. B. Beddie, 17, Saltoun Place, Fraserburgh.

*Dairy Cattle*.—Mr. William Hitch, Manor Farm, Elkstone, near Cheltenham.

*Lincoln and Down Breeds of Sheep*.—Mr. T. A. Jackson, Neswick, Bainton, Driffield.

*Pigs*.—Mr. Joseph Darlington, Stanwardine, Burlton, Shrewsbury.

20. These gentlemen have recently returned to this country, and a letter has since been received from the President of the Rural Society expressing his Council's most sincere thanks for the services rendered in this matter, and stating that the judges fulfilled their tasks with competence and ability, their verdicts being accepted with great satisfaction.

#### **Chemical Department.**

21. The number of analyses made for Members in the Society's laboratory has been slightly lower than in 1920—the figures for the twelve months being 420 as against 427 in 1920. As usual, these have been concerned rather with matters where some special difficulty, implying reference, has been involved, and with questions regarding soils and the treatment of land, than with the routine analysis of materials used on the farm. Considerable attention has been given to the use of lime in different forms, and the good practice of liming land is evidently returning. Towards the end of the summer a marked drop in the prices of artificial fertilisers was experienced, and the same occurred, to a lesser degree, with feeding stuffs. Several cases have been

brought to light in which castor-oil bean has been found to be present in cakes or meals, and to have been productive of harm to stock.

22. The issue of "Occasional Notes" having been discontinued by the Council, this means of disseminating information from the Society's laboratory no longer exists. It was found possible, however, to distribute to Members, with the issue of the *Journal*, a leaflet giving instances which showed clearly the good results to be obtained from making use of the Chemical privileges of the Society.

23. No action has as yet been taken by the Ministry of Agriculture in the direction of framing a new Fertilisers and Feeding Stuffs Act, though the need for this has been repeatedly urged by the Society and other bodies.

#### Woburn Experiments.

24. The Woburn Experimental Farm, after an existence of 45 years, has been given up by the Council, and its history and work would be closed but for the fact that Dr. Voelcker has taken over the farm and will continue to carry on the experiments on his own responsibility. The final official visit of the Council to the Farm was paid on July 28, and on September 26 a Sale of the farm effects was held.

25. The Experiments under the Hills Bequest, which were instituted at the Woburn Pot-culture Station in 1898, have been transferred to the Agricultural Department of Cambridge University.

26. The following Resolution will be submitted for the approval of the Council at their meeting on December 7:

"That the best thanks of the Council of the Royal Agricultural Society of England be and are hereby tendered to His Grace The Duke of Bedford, K.G., on the occasion of the Society relinquishing the tenancy of the Woburn Experimental Farm, for the great generosity extended to the Society by His Grace and his predecessors in connexion with this Farm.

"The work at Woburn was inaugurated in the year 1876 and was made possible by the Seventh Duke of Bedford placing at the disposal of the Society the Crawley Mill Farm of about 120 acres with House and Buildings and equipping and stocking such Farm for the purposes of carrying out Research Work and experiments and obtaining reliable data for the guidance of Valuers and others regarding unexhausted improvements and manurial values, and also as a means of comparison or check on experimental work of a similar nature being carried on at Rothamsted.

"In addition to granting the tenancy of the Farm to the

Society, the Duke expressed the desire that the additional buildings necessary for the conduct of the experiments should be built entirely at his expense.

“From the year 1876 to the year 1913, the successors of the Seventh Duke annually granted a sum averaging about £600 for the upkeep of the Woburn Farm and the conduct of all the experiments.

“The work of the Farm and the Scientific Research carried on there have enabled the Society to compile records which have proved to be of great practical value to the whole of the Agricultural community.”

#### **Botanical Department.**

27. The work of the Botanical Department during 1921 has been of a more or less routine nature throughout and has shown no markedly outstanding characteristics. Seed-testing was carried out on practically the same scale as in the two previous seasons, but the majority of the samples sent for examination were home-grown cereals. The fungi reported on were mainly the commoner disease-producing species on farm crops and fruit trees, but the list is noteworthy on account of the fact that, for the first time, *Phytophthora* (Blight) is absent from it. The specimens of weeds sent in for identification were more numerous than usual, and included two species of plants which, on account of their rarity, are of some interest. More identifications of grasses, both those of agricultural importance and species usually considered as weeds, were made than is usually the case.

#### **Zoological Department.**

28. Fewer complaints of insect attack on crops have been received this year than for several years past. Certain pests appeared very early, and a few, such as *Aphis*, were persistent throughout the summer, but later on, when crops had obviously failed on account of the drought, farmers were little disposed to pay much attention to subsidiary causes. Moreover such crops as did survive were often conspicuously free from injurious insects, and such common pests as Frit-fly and Wheat bulb-fly in cereals, and Cabbage caterpillars, Celery-fly and Asparagus beetle in vegetable crops, were much less in evidence than in recent years.

Insects injurious to fruit crops were, on the other hand, widely complained of, though, with the exception of universal *aphis* attacks, there were few cases of outstanding importance.

A certain number of animal parasites were sent for identification, and some forestry pests were inquired about, while numerous applications had reference to matters of entomological interest but of no economic importance.

Much time has been spent in investigating the mite now believed to be the cause of bee disease, and experiments are being carried out to elucidate its life history and its method of spreading. The discovery of the mite by no means settles the matter, and further research is urgently necessary.

**Animal Diseases.**

29. The principal feature of the year with regard to the occurrence of the contagious diseases has been the large number of outbreaks of foot-and-mouth disease which occurred in the month of January, no fewer than 21 outbreaks in eight different counties having been confirmed in the first four weeks. The outbreaks since the beginning of the year number 43, and no case has occurred since August 13. Glanders remains at a very low ebb, and there has been a marked decline in the outbreaks of parasitic mange in horses, and swine fever. On the other hand, the outbreaks of sheep scab continue to increase and are already 100 in excess of those reported at the same date last year. Anthrax has also increased considerably, and outbreaks are now as frequent as before the war. The number of cases of rabies reported since the beginning of the year is 23, the last case having been reported on July 9.

**Epizootic Abortion.**

30. Under the Epizootic Abortion Order of 1921, which came into operation on October 1, it is an offence to expose in a market, or to sell privately without notifying the purchaser, or to send to a bull for service without notifying the bull's owner, a cow or heifer which within the preceding two months has calved prematurely. It is also made illegal to allow such an animal to graze on any common or unenclosed land, or on any land insufficiently fenced. This Order, which is to be executed and enforced by Local Authorities, revokes the Order of 1920, under which power was given to Local Authorities to make their own regulations for dealing with this disease.

**Docking of Horses Bill.**

31. The Council, on the recommendation of its Veterinary Committee, fully associated itself with a resolution passed by the Shire Horse Society protesting against a private Bill introduced in the House of Commons to prohibit the docking of horses, as they viewed with grave alarm the result such a measure would have upon the breeding and using of cart horses in agriculture. The Bill was subsequently withdrawn.

**Research in Dairying.**

32. The fact that Shinfield Manor and its farms have now become the property of the National Institute for Research in

Dairying, makes it possible to look forward to developments in various directions, at least one of which arose as the result of correspondence between the Consulting Chemist and a member of the Society who wished for information concerning stored whey as a foodstuff for pigs. The study of this question has shown the value not only of the nutrients which whey contains but also of the accessory food factors which are present in it, and it appears to have established the fact that sour whey has a digestive action upon meals. It is deplorable that in the dairy industry so valuable a by-product is frequently allowed to go to waste. This investigation has had a considerable influence upon the development of the work of the Institute, since it has demonstrated the extreme importance of methods of feeding upon the ultimate food value of the pig and the probable influence of feeding upon breeding capacity. Further work upon these subjects can now be undertaken, and experiments are being conducted to show the influence of different varieties of food upon the milk of the cow.

33. From results obtained at the Dairy in the Society's Showyard it would appear that some forms of abnormal milk may be recognised by comparatively simple chemical tests. The method employed has now been used experimentally by a number of dairy farmers and is likely to be of considerable value.

34. During the year a large number of inquiries on a variety of subjects connected with the management and feeding of dairy stock, the methods of production and distribution of milk and the preparation of butter and cheese and other dairy products have been received.

35. Members of the Society desirous of obtaining advice under the "Milk and Dairy privileges" should address their inquiries to The Director, National Institute for Research in Dairying, University College, Reading. No fee is charged unless exceptional circumstances arise.

#### **Importation of Live Animals.**

36. The Council, in February of this year, unanimously reaffirmed their previously expressed opinion "That, having regard to the importance of protecting the live stock of this country from the introduction of contagious diseases, the R.A.S.E. deprecates any proposals to repeal the Diseases of Animals Act, 1896."

37. At a conference held last March, in the Guildhall, on the invitation of the Corporation of London, a resolution was passed by 72 votes to 44 calling for the removal of the restriction on the importation of Canadian Store Cattle. Following this came the announcement that a Royal Commission was to be appointed to inquire into the question. A conference of

representatives of the principal Agricultural and Breed societies was thereupon arranged by the Central Chamber of Agriculture to consider the position. As the outcome of this conference, a representative meeting of delegates of Chambers of Agriculture, Breed Societies, County and principal Agricultural Societies was held in the Council Chamber of the Royal Agricultural Society, to consider what action should be taken. The meeting unanimously resolved to oppose the proposed importation, and agreed that steps be taken to prepare and present a case to the Royal Commission. To meet the expenses to be incurred a guarantee fund was inaugurated, and it was agreed that the various chambers and societies should be asked to contribute to such fund on the basis of 1s. per member. The Royal Agricultural Society, which was represented at the meeting, has made a contribution on this basis. Under the name of the Live Stock Defence Committee, the body constituted at this meeting prepared and presented before the Commission the case for the retention of the present embargo.

38. Having now carefully considered the Report of the Royal Commission, the Council view with grave concern the findings of that Commission, and are more than ever convinced that any alteration in the Diseases of Animals Act, 1896, would eventually be detrimental to the production of home-grown cattle and consequently to the fresh meat supply of this country.

#### Medals for Cattle Pathology.

39. As the result of the competitive examination conducted at the Royal Veterinary College for the Society's Medals for Proficiency in Cattle Pathology, including the diseases of cattle, sheep and swine, the Silver Medal was gained by Mr. R. E. Glover, "Kaverron," Cavendish Road, Sutton, Surrey, and the Bronze Medal by Mr. W. Gibson, Highfield House, Oakham, Rutland.

#### Queen Victoria Gifts.

40. The sum of £140 has been contributed by the Trustees of the Queen Victoria Gifts Fund to the Royal Agricultural Benevolent Institution for the year 1921.

#### National Diploma in Agriculture.

41. Thirty candidates were successful in gaining the National Diploma in Agriculture—one "with Honours"—at the Twenty-second Annual Examination held at the University of Leeds from April 7 to 14 last. See list on p. 240.

#### National Diploma in Dairying.

42. The Twenty-sixth Annual Examination for the National Diploma in Dairying was held at the University College and British Dairy Institute, Reading, for English students, from

September 9 to 16, and at the Dairy School for Scotland, Kilmar-nock, for Scottish students, from September 23 to October 1. Forty-two candidates were examined at the English centre, of whom 26 were successful, two reaching the Honours standard. Forty-nine candidates presented themselves at the Scottish centre, of whom 37 passed, two gaining Honours. See lists on pp. 244 and 245.

**Representation of Science, Research and Education.**

43. The Council have had under consideration the following resolution passed at the General Meeting in the Derby Show-yard: "That special representation on the Council be given to Agricultural Science, Research and Education, and that it be referred to the Council to consider the best means of carrying this into effect." They hope to be in a position to make a report thereon at their next meeting.

**Agricultural Relief of Allies.**

44. The Agricultural Relief of Allies Committee has practically completed its work of helping the farmers in the devastated regions of our Allies. During the current year it has sent out agricultural machinery, tools, seeds, etc., to Serbia of a total value of about £20,748, making £68,548 sent in all to that country. Further gifts have been sent to Belgium of a total value of £3,660, and the Committee are now engaged in the purchase and transportation of a gift of stock to Roumania for which £15,000 was allocated, but which could not be consigned until now owing to shipping difficulties. The Committee are also engaged in the expenditure of a sum of £18,000 which was received from the surplus funds of the British Ambulance Committee for distribution in France. When the operations of the Committee are completed there will have been distributed in the form of live stock, fruit trees, seeds, machinery, etc., the following amounts:—

France . . .	£92,500	Roumania . . .	£15,000
Belgium . . .	56,839	Poland . . .	491
Serbia . . .	68,548		

This is exclusive of £9,436 as the value of dairy cattle sent to Belgium by the Scottish Committee, and of £9,000 sent direct by the Canadian Branch in the form of small tools to various countries. Including these amounts the total is brought to £251,814.

45. The Belgian recipients of the Committee's relief have again exhibited their animals at a small "Show" in the devastated region, this time at Dixmude, and members of the Committee were gratified to find both that the recipients are taking great care of the stock given to them and that the district is making such remarkable progress towards agricultural restoration.

There has been instituted at the suggestion of the Committee

a scheme of milk recording which is being applied only to the stock sent by the Committee, and this should be the means of a great improvement in the dairy stock of Western Flanders.

46. The Committee can assure those who supported them in their work that their efforts have produced results of the greatest practical benefit.

By order of the Council,

T. B. TURNER, *Secretary.*

16, BEDFORD SQUARE,  
LONDON, W.C.1.  
*November 2nd, 1921.*

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## NATIONAL AGRICULTURAL EXAMINATION BOARD.

### I.—REPORT ON THE RESULTS OF THE TWENTY-SECOND EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE, HELD AT LEEDS, APRIL 7 TO 14, 1921.

1. The Twenty-second Examination for the NATIONAL DIPLOMA IN AGRICULTURE was, by the courtesy of the authorities, held at the University of Leeds, from the 7th to the 14th April last.

2. The subjects of Examination were Practical Agriculture (two papers), Farm and Estate Engineering (including (a) Surveying and Farm Buildings, (b) Machinery and Implements), Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology, and Veterinary Science. Under the Regulations, the whole eight papers could be taken at one time, or a group of any three or four in one year and the remaining group of four or five in the year following. Candidates taking the whole Examination in one year who failed in not more than two subjects were allowed to take those subjects alone in the succeeding year. Candidates failing in a single subject of a group were permitted to take that subject again in conjunction with the second group.

3. One hundred and eighty-six candidates presented themselves, as compared with 127 last year. Ten candidates took the whole Examination, 53 who had previously passed in certain subjects appeared for the remaining portion, and the other 123 candidates came up for a first group of subjects.

4. As the result of the Examination, the following 30 candidates were successful in obtaining the Diploma, one *with Honours*. The names of the Diploma-winners are in alphabetical order:—

*Diploma with Honours.*

WILLIAM RIDDET, West of Scotland Agricultural College, Glasgow.

*Diploma.*

JOHN ARMOUR, West of Scotland Agricultural College, Glasgow.

PHILIP STANLEY BROWN, Harper Adams Agricultural College, Newport, Salop.

IAN CAMPBELL, West of Scotland Agricultural College, Glasgow.

EDWARD GORDON CHAPMAN, Midland Agricultural and Dairy College, Sutton Bonington, Loughborough.

WILLIAM FRANK CHEAL, South Eastern Agricultural College, Wye, Kent.

LESLIE ERIC COOK, University College, Reading.

RALPH A. COULTHURST, Midland Agricultural and Dairy College, Sutton Bonington.

WILLIAM LEWIS DAVIES, University College of Wales, Aberystwyth.

ALEXANDER BRUCE DICKSON, West of Scotland Agricultural College, Glasgow.

EDWARD FARQUHARSON, University of Aberdeen.

HERBERT EDWARDES GATTON, South Eastern Agricultural College, Wye, Kent.

REGINALD J. HAINES, Midland Agricultural and Dairy College, Sutton Bonington.

JOHN SIDNEY KING, Midland Agricultural and Dairy College, Sutton Bonington.

ARTHUR WILLIAM LING, South Eastern Agricultural College, Wye, Kent.

JOHN WALTER LOWE, Harper Adams Agricultural College, Newport, Salop.

JOHN McEVOY, Royal College of Science, Dublin.

ALEXANDER W. McGOWAN, West of Scotland Agricultural College, Glasgow.

HERBERT MARSLAND, Harris Institute, Preston.

ALEXANDER NELSON, West of Scotland Agricultural College, Glasgow.

ANDREW WILSON PATERSON, West of Scotland Agricultural College, Glasgow.

WILLIAM THOMAS PRICE, University College, Reading.

CLIFFORD WILLIAM ROBERTS, Midland Agricultural and Dairy College, Sutton Bonington.

DOUGLAS HERWORTH ROBINSON, University College, Reading.

ROBERT M. S. ROUTLEDGE, University of Leeds.

THOMAS ERIC SHADRACK, Harris Institute, Preston.

DENIS SLATTERY, Royal College of Science, Dublin.

JOHN VIRTUE WHITELAW, West of Scotland Agricultural College, Glasgow.

GEOFFREY M. P. WILLIAMS, Midland Agricultural and Dairy College, Sutton Bonington.

ROBERT CECIL WOOD, University of Leeds.

Fifteen candidates failed in a single subject, and will be permitted to take that alone next year, when, if successful in passing, they will be awarded the National Diploma.

5. Of the 123 candidates appearing for a first group of subjects, the 40 whose names are given below succeeded in passing and are therefore entitled to take the remaining subjects at next year's Examination. If they then satisfy the Examiners, they will be entitled to the diploma:—

JOSEPH L. ALLAN, West of Scotland Agricultural College.  
JOHN ARCHIBALD, Midland Agricultural and Dairy College.  
FINNBAR D. ATTERIDGE, Midland Agricultural and Dairy College.  
PERCY WALTER BAILEY, Midland Agricultural and Dairy College.  
PHILIP T. S. BROOK, South Eastern Agricultural College.  
ROBERT BRYAN, West of Scotland Agricultural College.  
DAVID THOMSON DICKIE, West of Scotland Agricultural College.  
ALAN V. B. FOSTER, Midland Agricultural and Dairy College.  
THOMAS A. FOWLER, West of Scotland Agricultural College.  
FRANCES A. M. GARDEN, West of Scotland Agricultural College.  
WILLIAM D. GENTLEMAN, West of Scotland Agricultural College.  
JAMES GIBSON, Midland Agricultural and Dairy College.  
EDGAR P. GODDARD, South Eastern Agricultural College.  
ROBERT GRAHAM, University of Leeds.  
PENEDDUS J. HAYES, South Eastern Agricultural College.  
JOHN W. T. HOLLOWAY, West of Scotland Agricultural College.  
JOHN JACKSON, West of Scotland Agricultural College.  
WILLIAM A. JACQUES, Harris Institute, Preston.  
ABRAHAM ARTHUR JAMES, University College of Wales, Aberystwyth.  
REGINALD L. LEWIS, University of Leeds.  
THOMAS MCCORMICK, West of Scotland Agricultural College.  
ALEXANDER MCCHORIE, West of Scotland Agricultural College.  
SEUMAS W. MACDOUGALL, West of Scotland Agricultural College.  
WILLIAM D. MACFARLANE, West of Scotland Agricultural College.  
JAMES MACKIE, West of Scotland Agricultural College.  
JAMES M. MACNAIR, West of Scotland Agricultural College.  
JAMES N. MAIN, West of Scotland Agricultural College.  
ROLAND M. NATTRASS, South Eastern Agricultural College.  
JOHN O. PAGE, Harper Adams Agricultural College.  
WILLIAM C. PATERSON, West of Scotland Agricultural College.  
COMPTON E. PEARSON, Harper Adams Agricultural College.  
ADRIAN J. ROBB, West of Scotland Agricultural College.  
JAMES A. RODGER, West of Scotland Agricultural College.  
MALCOLM ROSS, West of Scotland Agricultural College.  
WILLIAM NEIL SINCLAIR, West of Scotland Agricultural College.  
WILLIAM G. TALBOT, West of Scotland Agricultural College.  
JOHN THOMPSON, Harris Institute, Preston.  
JOSEPH K. THOMPSON, University of Leeds.  
LEWIS N. T. WILLIAMS, Harper Adams Agricultural College.  
STEPHEN Y. WYLLIE, West of Scotland Agricultural College.

Thirty-one of the 83 unsuccessful candidates who sat for a group of three or four subjects failed in a single subject, which they will be permitted to take again next year in conjunction with the second group.

6. The Reports of the Examiners in the different subjects are appended:—

PRACTICAL AGRICULTURE. (First Paper, 300 Marks. Second Paper, 300 Marks.) Wm. Burkitt, B.Sc., J. G. Stewart, M.A., B.Sc., and J. A. Symon, M.A., B.Sc.

In general, the answers, both written and oral, show an improvement on those of last year, but they still reflect in a large proportion of cases, a lack of practical experience. This was specially noticeable in respect of candidates from some of the English Colleges where, apparently, students are accepted straight from school on the plea that a break in their studies would be prejudicial to their work at College.

As regards students reared on the farm and familiar with farm life and work, this arrangement may have much to commend it, but it is a serious handicap to other classes of students who present themselves for the National Diploma Examination.

Among Scottish candidates a larger proportion than usual were not connected with farming, but in almost every case the candidate had acquired considerable experience of farm work and proved capable of dealing with questions involving not only a knowledge of scientific principles but also the application of such principles and of the results of scientific investigation to farm practice.

**FARM AND ESTATE ENGINEERING.** (a) Surveying and Farm Buildings (150 Marks), Edward Walford, F.S.I. (b) Machinery and Implements (150 Marks), Prof. R. Stanfield, M.Inst.C.E.

*Surveying and Farm Buildings.*—The Surveying written papers were on the whole quite well done. The oral examination, however, showed only a book and crammed knowledge of the theodolite, and in nearly all cases a complete lack of knowledge of the use and meaning of the ordnance survey maps. I am of opinion that a theodolite is an instrument that the candidates will never require to use, and it might well be omitted from the Syllabus. Map reading, on the contrary, is necessary and should be most useful to them.

The elementary Building questions were either not answered at all or the answers showed a great lack of practical knowledge, and the majority of failures were due to the poor Building papers rather than to the Surveying ones.

*Machinery and Implements.*—The majority of the seventy-nine Candidates who were examined gave evidence of having acquired a satisfactory knowledge of the principles and working of agricultural machines and implements. It was particularly noticed that many of the candidates had had actual experience of agricultural tractors, and they were able to give intelligent answers to questions bearing on their working, especially with regard to possible faults and the necessary procedure to follow in remedying them. In the Oral Examination many points in this connection, as well as in the working and adjustment of the usual farm implements were brought out, which showed that the candidates had given serious attention to this important matter. At the same time, it is evident that much of the candidates' knowledge of the principles of working of stationary engines for driving agricultural machines has been obtained solely from text-book sources. It is most essential that candidates, before presenting themselves for examination, should have had some working experience of this type of machinery. Many candidates were very weak in questions involving calculations, and their answers indicated that more attention should be paid to elementary mathematics. On the whole, the standard of proficiency of the candidates appeared to be higher than in former years, showing that special attention is being given to this section of the N.D.A. Examination.

**AGRICULTURAL CHEMISTRY.** (300 Marks.) E. J. Russell, D.Sc.  
J. F. Tocher, D.Sc.

The best of the candidates did very good work, showing a clear grasp of the principles of the subject and a knowledge that could not fail to be useful both for practical farming and for expert and advisory work. The majority of the candidates, however, fell short of this standard, and some had only a feeble knowledge which could be of little assistance to them. In many cases the elementary facts were not known; one candidate was prepared to discuss the ionic dissociation of ammonium sulphate, but did not know whether this substance was acid, alkaline or neutral; a number of candidates were wholly ignorant of the meanings of such common terms as "30% super," "slag of 80% solubility," "muriate equal to 45% potash." Too much reliance is in many cases placed on lecture notes, with the result that words and phrases not clearly heard are copied down incorrectly and reproduced with ludicrous errors. Some candidates were in our opinion insufficiently grounded in the elementary parts of the subject, and fell considerably below the pass standard. Serious attention should be paid to the elementary teaching.

**AGRICULTURAL BOTANY.** (300 Marks). R. Stewart MacDougall, M.A., D.Sc.

The results of the Examination in this subject were, on the whole, satisfactory, with perhaps fewer candidates attaining the "excellent" standard. The written Paper seemed to be followed by a number of candidates rather long for the time given, but there is a great tendency on the part of candidates to write round about the subject asked and to introduce unnecessary matter. Great improvement was noticed. A practical question was introduced into the written Paper, the large seed of the Castor Oil plant being distributed for dissection and description. The test was partly one in observation. Few of the candidates did well in this question, many jumping to the conclusion that the parts and their arrangement were the same as in the ordinary bean, and the drawings and description given were those of the ordinary bean.

The practical and oral examinations that succeeded the written Paper were encouraging, quite a number of candidates doing well here in spite of only a fair written paper.

**AGRICULTURAL BOOK-KEEPING.** (200 Marks.) L. F. Foster, F.C.I.S., F.L.A.A.

A distinct improvement was noticeable in the quality of work submitted in this subject. The papers of many candidates showed evidence of careful preparation and a good working knowledge of the subject, whilst several candidates earned very high marks.

On the other hand, a large percentage possessed an imperfect knowledge of the principles

of the subject, and this fact no doubt accounted for their being unable to complete satisfactorily the first (compulsory) question. It is essential that candidates should have plenty of practice in working book-keeping exercises, as this impresses the principles on the mind, gives confidence, and allows of speedy work. Only by practice can transactions be visualised and their effect upon the accounts observed.

**AGRICULTURAL ZOOLOGY. (200 Marks.) Cecil Warburton, M.A.**

The work of most of the candidates was satisfactory. In the case of some, however, the standard attained was quite inadequate, and the commonest agricultural pests were not recognised. Frequently recurring mistakes were the confusion of moles with voles and of the common moth with the winter moth, and the statement that leaves of plants were "eaten" by aphids.

**VETERINARY SCIENCE. (200 Marks.) Professor Sir John McFadyean, M.B.**

The knowledge of the subject displayed by the candidates was upon the whole satisfactory, but an unusual proportion of the written papers contained evidence of defective general education.

7. The thanks of the Board are again due to the authorities of the University of Leeds, for their liberality and courtesy in placing the Great Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *vivâ voce* examination.

ERNEST MATTHEWS, *Chairman.*

16, Bedford Square, London, W.C.1.

*May, 1921.*

**NOTICE.**

The National Agricultural Examination Board desire to give notice that at the Examination of 1923 all candidates will be required, in addition to presenting College Certificates for certain preliminary subjects, to produce evidence of possessing a practical knowledge of agriculture obtained by residence on a farm for a period or periods covering a complete year of farming operations.

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**II.—REPORT ON THE RESULTS OF THE  
TWENTY-SIXTH EXAMINATION FOR THE NATIONAL  
DIPLOMA IN DAIRYING, 1921.**

1. The Twenty-sixth Annual Examination for the National Diploma in the Science and Practice of Dairying was held for English candidates at the University College and British Dairy Institute, Reading, from September 9 to 16; and for Scottish candidates at the Dairy School for Scotland, Kilmarnock, from September 23 to October 1.

2. Forty-two candidates presented themselves at the English Centre. Of these thirty-three appeared for the first time, while the remaining nine, having failed last year in the theoretical portion of the Examination, were permitted to take that portion again on the present occasion. Two candidates attained the "Honours" standard and twenty-four others were awarded the Diploma:—

**ENGLISH CENTRE.***Diploma with Honours.*

1. HENRY BARRATT PIDDUCK, Midland Agricultural and Dairy College, Kingston, Derby.
2. JOHN HOLMES, University College and British Dairy Institute, Reading.

*Diploma.*

DORIS BOWES, Lancs C.C. Dairy School, Hutton, Preston.  
 PHYLLIS M. G. CLARKE, British Dairy Institute, Reading.  
 AVIS COLNETT, East Anglian Institute, Chelmsford, and British Dairy Institute, Reading.  
 MURDOCH C. E. DAHL, Midland Agricultural and Dairy College, and British Dairy Institute.  
 MYFANWY DAVIES, British Dairy Institute.  
 RUTH DAWSON, British Dairy Institute.  
 RUTH M. DILWORTH, Lancs C.C. Dairy School.  
 JOHN KEMP DOUGLAS, British Dairy Institute.  
 DOROTHY E. GRANT, British Dairy Institute.  
 MARJORIE W. HARTLEY, British Dairy Institute.  
 DOROTHY U. HOSKIN, British Dairy Institute.  
 JENNIE JONES, British Dairy Institute.  
 EVA C. OWEN, University College, Aberystwyth, and British Dairy Institute.  
 MAUDE K. PAYNE, Lancs C.C. Dairy School, and British Dairy Institute.  
 CHARLES E. PLATT, The Lindens, Newport, Shropshire.  
 WILLIAM T. PRICE, British Dairy Institute.  
 KATHLEEN ROSE-INNES, Midland Agricultural and Dairy College.  
 ALFRED J. ROWNTREE, British Dairy Institute.  
 FLORENCE E. SKELDING, Lancs C.C. Dairy School.  
 THOMAS W. STEER, British Dairy Institute.  
 MAY C. THOMAS, British Dairy Institute.  
 IDA WELCH, British Dairy Institute.  
 MARJORIE J. WHITEHEAD, British Dairy Institute.  
 PHYLLIS WILLIAMS-GARDNER, British Dairy Institute.

3. At the Scottish Centre, there were forty-nine candidates in all. Forty-two of these took the whole examination, and seven, who had previously passed in practical cheese and butter making, were allowed to sit again this year for the Paper work and *viva voce* only. Thirty-seven candidates succeeded in satisfying the Examiners, two of them gaining the Diploma with Honours:—

**SCOTTISH CENTRE.***Diploma with Honours.*

1. WILLIAM RIDDET, Cubeside, Dalry, Ayrshire.
2. SYDNEY R. KIRK, Ardyne, Sandyhills Road, Mount Vernon, Glasgow.

*Diploma.*

ROSE BAIN, Milltimber Farm, Milltimber, Aberdeenshire.  
 WILLIAM GRAHAM BARCLAY, Langbarns, Kirkcudbright.  
 ROBERT BRYAN, Orcharton, Cumnock, Ayrshire.  
 HELEN EMILY CAMERON, Clunemore House, Drumnadrochit.  
 HELEN MARGARET CATHCART, 3, Tipperlinn Road, Edinburgh.  
 THOMAS MURRAY CLEMENT, West View, Stranraer.  
 VERA COX, Scorrier, Cornwall.

MARY ELIZABETH CUMMING, Lethendry, Aviemore, Inverness-shire.  
THOMAS DOUGLAS DRYSDALE, 55, Colinton Road, Edinburgh.  
CHRISTIANA M. DUNN, Stonedykes, Bridge of Dee, Aberdeen.  
ELLA PATERSON FRASER, Hill House, Inverness.  
ZOE FREEMAN, Shepperton, Middlesex.  
BRYCE BLAIR GARVEN, Dunblair, Irvine Road, Kilmarnock.  
MARGARET C. GRAHAM, Gallowbury, Stewarton, Ayrshire.  
PATRICIA J. GRIEVE, Drumyellow, by Arbroath.  
DORA HARRISON, 70, Arden Street, Edinburgh.  
ELIZABETH M. HOLMES, 167, Eldon Street, Greenock.  
MARIE A. INGLIS, 4, Gillespie Crescent, Edinburgh.  
MURRAY INGLIS, 15, Denham Green Terrace, Edinburgh.  
HERBERT C. JAMES, Leburnums, Westhoughton, Lancs.  
ZAL R. KOTHAVALA, Ahmedabad, India.  
ALEXANDER LANG, Balronan, Gartocharn, by Alexandria.  
ALEXANDER W. MCGOWAN, 5, Windsor Terrace, Glasgow.  
PENELOPE L. MCLENNAN, Sorelle Lodge, Benbecula, Inverness.  
HERBERT MARSLAND, 30, Canterbury Street, Ashton-under-Lyne.  
HELEN B. PIRIE, Murrayfield, Pittenweem, Fife.  
E. WYATT SAMPSON, Corpus Christi College, Cambridge.  
LILLIAS SCOTT, Hillend Gardens, Crossford, Carlisle.  
MARGARET M. STEWART, Lockhill, Ringford, Kirkcudbright.  
JANE L. STRANG, Bedeow, Kirkintilloch.  
JESSIE W. STRANG, Eaglesham, Glasgow.  
MARJORY J. STUART, Lantichan, Nethy Bridge, Inverness.  
JANET M. SWANSON, Philips Mains, Mey, Thurso.  
MARGARET M. R. SWANSON, Philips Mains, Mey, Thurso.  
JOHN N. C. WEIR, Woodlie Farm, Lenzie, Glasgow.

All the candidates at the Scottish Centre had been students at the Kilmarnock Dairy School.

4. The Examiners at both centres were:—William Burkitt, B.Sc., F.H.A.S., N.D.D. (General Dairying, practical Butter-making and Capacity for imparting Instruction); John Benson (Cheese-making); and J. F. Tocher, D.Sc., F.I.C. (Chemistry and Bacteriology).

5. In his report, Mr. Burkitt states that, “with a few exceptions, the standard of the papers in General Dairying was not high. Many of the candidates at the Scottish Centre read the questions carelessly, which of course reduced the marks gained. Generally speaking, the candidates who had not been brought up on a farm showed a lack of knowledge of the practical side of dairy farming, and their training in this respect had been much too short, this remark applying especially to the English students.

“Evidence of ‘Capacity to impart instruction to others’ was generally satisfactory, more especially so at Reading, whilst the practical Butter-making was good, the Scottish candidates if anything excelling in this respect.”

6. Mr. Benson’s report is as follows:—

“ENGLISH CENTRE.—The results obtained in the Cheese-making section at this centre were, on the whole, satisfactory. In practical work most of the candidates did well, and certainly

better than at previous examinations. There was, however, a good deal of variation in the methods followed in making the cheese, but this was to be expected, seeing that the candidates had been trained at several teaching centres. Though the methods varied, the results were good, and practically the whole of the candidates made excellent cheeses. This year the blue-veined type of cheese was particularly well made.

"In the written and oral examination many of the candidates did well, but several were below the standard of previous years. There was a lack of general knowledge bearing on the handling of milk in factories and on the cost of producing cheeses at the present time. On the management of modern dairy machinery and the keeping of accounts in large dairies, the answers given were generally weak. A number of candidates, who failed in the theory of dairying last year, took the written and oral examination again, and I am pleased to say that, on the whole, they did well, and had greatly improved since the Examination of 1920.

"**SCOTTISH CENTRE.**—Nearly all the candidates here succeeded in passing in practical work. They had all been trained at Kilmarnock, hence there was greater uniformity in their methods of handling the milk than was the case at Reading. The hard-pressed cheeses were particularly well made, and there was considerable improvement in the manufacture of blue veined and soft cheeses.

"The results obtained in the written and oral examination were very satisfactory, and the passes in the theory of cheese-making higher than usual. Exception must, however, be made in the case of several candidates who failed in theory in 1920 and who again entered for that part of the examination. In several instances there was no noticeable improvement, and the percentage of failures was greater amongst these than was the case with candidates taking the Examination for the first time.

"The milk supply at each centre was ample and good, and those in charge of the two Schools did everything possible to make the Examinations a success."

7. Dr. Tocher reports that "the candidates at Reading and Kilmarnock showed a fair knowledge of the chemical composition of dairy products. In many cases, however, candidates were deficient in their knowledge of general chemistry. It is easy by an effort of memory for a candidate to recall the names of the constituents of milk, butter fat and other dairy compounds, but in general elementary chemistry where a knowledge of chemical principles and laws and their application is required memory alone is of little value.

"It seems to me that if a more extended practical laboratory

course in chemistry was taken by students in conjunction with chemistry lectures and demonstrations, the candidates would be in a much better state of preparation for the examination. The real nature and characteristics of elements and such compounds of elements as acids and alkalis should be understood by every candidate who sits for an examination in elementary chemistry.

"The knowledge of bacteriology required from candidates is also of quite an elementary character. Here again, unless a practical course is taken in conjunction with lectures and demonstrations, the actual significance of the part played by bacteria in dairying is not likely to be grasped by students. The knowledge of the bacterial content of normal milk shown by candidates was in the main of a satisfactory character. Generally speaking, however, the knowledge of the possible bacterial contents of abnormal milks was somewhat vague in character.

"A new feature of the Examination was the description of the contents of the field of a microscope—usually a typical organism was placed under the microscope for description by the candidate. This is a useful part of the examination as giving a measure of the candidates' power of observation and description."

ERNEST MATHEWS,  
Chairman.

T. B. TURNER,  
*Secretary.*

16, Bedford Square, London, W.C.  
*October, 1921.*

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ANNUAL REPORT FOR 1921 OF THE  
PRINCIPAL OF THE ROYAL VETERINARY  
COLLEGE.

ANTHRAX.

The following table shows the number of confirmed outbreaks of anthrax in each of the past seven years:—

Year.	Outbreaks.	Animals attacked.
1915	575	642
1916	571	687
1917	421	480
1918	245	282
1919	234	314
1920	459	547
1921	515	650

The varying incidence of the disease during the period which is disclosed in these figures is easily understood when it is remembered that in this country the great majority of the outbreaks are attributable to anthrax spores introduced on to farms in feeding stuffs or manures imported from countries in which

anthrax is indigenous. The decline which began in 1917, and in the next two years reduced the outbreaks to less than half the average of preceding years, was due to the reduction in the quantity of feeding stuffs and other materials imported from abroad during that period, and the increase in the number of outbreaks which began in 1920 was predicted in the Annual Report for 1919 as a necessary consequence of resumed trade with foreign countries.

The disease has now reached what may be termed its normal rate of prevalence, and there is no reason to expect that the number of outbreaks will rise above pre-war figures. It is interesting to note that throughout the fluctuation due to the circumstances arising out of the war the average number of animals attacked in each outbreak has not varied sensibly, but remained at one and a small fraction. This has always been a feature of anthrax in Great Britain, and it is in marked contrast to what is observed in countries in which the disease is frequent and mainly or entirely due to permanent soil infection.

#### GLANDERS.

The following table shows the number of outbreaks during the last six years and the number of horses attacked during each of those years:—

Year.	Outbreaks.	Animals attacked.
1916	47	117
1917	24	62
1918	34	98
1919	25	61
1920	15	22
1921	11	42

The figures for the past year are again a little disappointing, as the low ebb to which the disease had been reduced several years ago appeared to justify a hope that it might soon be stamped out. That has not been realised, but how relatively satisfactory the present position is will be understood when it is recalled that as recently as 1906 the annual outbreaks of glanders in Great Britain exceeded one thousand.

#### SHEEP SCAB.

Year.	Outbreaks.
1913	235
1914	226
1915	257
1916	381
1917	543
1918	351
1919	438
1920	479
1921	732

These figures must be regarded as unsatisfactory and disappointing, since they show that outbreaks have been three

times as numerous last year as in the year preceding the war, and that, after having been in operation for a year, the Sheep Scab Order of 1920 has failed to make any impression on the disease.

In considering the means by which sheep scab might be eradicated from this or any other country it is important to note that the difficulty in curing the disease is not one of the obstacles. Careful double-dipping in the manner prescribed by the Ministry of Agriculture will in the immense majority of cases cure a sheep of scab, and there is no reason whatever to suppose that the disease is at present spread to any important extent by sheep in which the disease has persisted in spite of double-dipping after notification to the local authority. The root difficulty of eradication is failure of owners to report the existence of the disease or to adopt the means necessary to cure their own flocks, with the result that recently affected but apparently healthy animals are sent to markets and fairs and carry the disease to new centres when sold. Against this danger every owner can protect himself by double-dipping all his new purchases, but it is not to be expected or advised that such double-dipping should be practised whenever sheep change hands, because throughout the greater part of the country the vast majority of the flocks are free from sheep scab at all seasons of the year. For this reason the compulsory general dipping of sheep throughout the whole country with the object of eradicating the disease was not a justifiable procedure.

It is a fact beyond dispute that the continuance of the disease is mainly due to its concealment on the large sheep farms in the hill and mountain districts in Wales, Scotland, and the North of England. The main purpose of the Order of 1920 was to enable the Ministry of Agriculture to deal effectively with outbreaks in those counties which, owing to their inaccessibility, had continued to be nurseries of the disease. The experience of the past year indicates that the measures employed with that object will have to be strengthened.

#### SWINE FEVER.

The number of confirmed outbreaks of this disease in each of the last eight years was as follows:—

Year.		Outbreaks.
1914	..	4,356
1915	..	3,994
1916	..	4,331
1917	..	2,104
1918	..	1,407
1919	..	2,305
1920	..	1,816
1921	..	1,286

It has been thought necessary to give figures as far back as 1914, because that was the last complete year in which swine fever was dealt with under what may be termed the stamping-out policy, which required the compulsory slaughter of diseased and in-contact pigs. This method was abandoned in September, 1915, and the measures which have since been employed aim only at holding the disease in check. Compulsory slaughter and compensation have been stopped, and owners of infected pigs are encouraged to employ serum inoculation to minimise their losses.

As the table shows, there has been a great reduction in the number of confirmed outbreaks since the new system was adopted, and this is the more gratifying because apparently no one expected it. That inoculation of pigs with serum cannot be more efficacious in preventing the spread of infection than the prompt slaughter of the same animals is manifest, and it is therefore not easy to explain the marked reduction in the number of outbreaks that began in 1917 and was continued during the past year. The most probable explanations appear to be that since the abandonment of the stamping-out policy owners have been more willing to give prompt notice of the suspected existence of the disease (which is an essential condition for preventing new outbreaks), or that the virulence of the disease has from some natural cause declined during recent years.

#### FOOT AND MOUTH DISEASE.

During the past year 44 outbreaks of this disease occurred in Great Britain. This is a decided improvement on the previous year, during which 93 outbreaks were confirmed. The outbreaks occurred in the following counties:—Derby, 11; Warwick, 8; Lincoln, 6; York (East Riding), 6; York (West Riding), 3; Chester, 2; Stafford, 2; and 1 each in Gloucester, Northampton, Oxford, Hereford, Kent and Norfolk. The worst period of the year was the first four weeks, during which no fewer than 21 outbreaks occurred in seven different counties. The total number of animals slaughtered as diseased or exposed to infection in connection with the 44 outbreaks, was 3,085.

In the counties of Derby, Lincoln, Warwick, and York (East Riding) all the outbreaks with the exception of the primary one were probably caused by a local dissemination of the virus, but there seems no reason to doubt that the disease was started on a large number of occasions by fresh importations of the virus from abroad, although it is understood that an actual clue to the introduction was not discovered in any case. It is known that the disease has been on the decline during the past year in the western part of the continent of Europe, and there is therefore

reason to hope that in the future outbreaks will become less numerous in this country.

#### RABIES.

The following table shows the number of confirmed cases of rabies since the disease was reintroduced into this country in 1918 :—

Year.	Cases.
1918	98
1919	150
1920	42
1921	23

According to counties, the cases were distributed as follows :— Hants 16, Bucks 4, Wilts 2, and Berks 1. Fourteen of the cases occurred during the first two months of the year, and the last case occurred in Hants during the week ended July 9.

#### PARASITIC MANGE IN HORSES.

The incidence of the disease during the last four years is shown in the following table :—

Year.	Outbreaks.	Animals attacked.
1918	4,463	8,377
1919	5,016	9,861
1920	3,564	3,812
1921	2,048	3,094

The decline in the prevalence of the disease which has occurred during the last year is very satisfactory. No doubt the improvement is mainly due to the better feeding of horses and the greater attention which it has been possible to give them in the way of grooming and stable management since the conclusion of the war.

#### TUBERCULOSIS AND INFLAMMATION OF THE UDDER IN COWS.

Attention is again called to the fact that the Research Department of the College is willing to give free advice to the owner of any pedigree herd who wishes to free it from tuberculosis, and who will agree to carry out as far as may be practicable the measures which are recommended to secure that object.

Members of the Society are also invited to apply to the College for assistance and advice with regard to outbreaks of abortion in mares, or of what appears to be a contagious form of garget or inflammation of the udder in cows.

J. MC FADYEAH.

Royal Veterinary College,  
Camden Town,  
London, N.W.1.

ANNUAL REPORT FOR 1921 OF THE  
CONSULTING CHEMIST.

THERE was a slight increase in the number of samples sent by members for analysis during 1921, the figure being 448 as against 429 in 1920. In addition, there were 16 samples of Cider analysed in connection with the Society's Country Show at Derby.

The number of samples of Feeding Stuffs shows a considerable diminution on the figures for 1920, but this was made up by a larger number of Fertilisers being sent. The excess consisted principally of samples of Shoddy and of Lime. Also, a large number of waters were analysed, and, as in 1920, a considerable number of soils (54) were sent for analysis and report.

Though the issue of "Occasional Notes" had been discontinued, it was found possible to take advantage of the issue of other circulars to members, to bring out, in May and November respectively, leaflets containing the details of several cases of considerable interest and importance to members.

No further action has been taken with regard to an amendment of the Fertilisers and Feeding Stuffs Act, or to bring in a fresh Act altogether, although there has been some talk of this. It is high time that something was done in this direction, in view of the many representations made and of the general agreement arrived at as to the points in regard to which the Act most needs revision. No one point is more important than that of the ten days' limit. The existence of this limit proves a constant bar to the taking of action, and the difficulty of taking samples within the prescribed period has been further accentuated by recent alterations in respect of Sunday posts.

The supplies both of Feeding Stuffs and of Fertilisers have improved somewhat during the year, but at no period could one be sure of obtaining what one wished to order.

The prices of Feeding Stuffs have, generally speaking, not altered markedly, though they were, on the whole, lower at the end of the year than at the beginning. Thus, Linseed Cake, which began the year at £18 per ton, came down, in May, to £14 per ton, the price remaining in the neighbourhood of that figure to the close of the year.

Cotton Cake, which was quoted at £11 per ton in January, came down to £10 and £9 10s. per ton in July, and so remains.

In Fertilisers, however, there was a very marked change experienced about the half-year. Superphosphate (30 per cent.) which cost £8 15s. per ton from January to June, dropped, in July, to £6 5s., and in October, to 90s. per ton, while Basic Slag experienced a similar fall after July.

Sulphate of Ammonia, which, up to May, had cost £24 per

ton, fell in price to £18 in June, to £15 18s. in November, and to £15 13s. in December, while Nitrate of Soda, which in January had cost £21 10s., dropped in October to £15 19s., and in November to £14 15s. per ton.

These marked changes have called for a reconsideration of the Tables of Compensation for Unexhausted Manure Value as last revised by Sir Daniel Hall and myself in 1914. At the instance of the Central Association of Agricultural Valuers, these Tables have been revised and recalculated to November, 1921, and are now available in their new form.

Among Feeding Stuffs there has been no exactly new material brought out. Dried Yeast, however, has been employed more extensively, and so also has Fish Meal, for feeding purposes.

As regards Linseed Cake, it is well that a timely notice be given. For a considerable number of years past there has been practically nothing to complain of in connection with the purity of cakes sold as Linseed Cake; indeed, it has been quite an exception to get a bad one. Quite recently, however, I have come across cases which indicate a less satisfactory state of things, and I have had several instances brought to my notice of Linseed Cake in which the seed used has not been sufficiently screened from weed and other seeds, or has contained excessive sand.

I call to mind the days when—about thirty years ago—I laid down, on behalf of the R.A.S.E., certain requirements to which Linseed Cake should conform in order to be considered as “pure.” At first there was a great outcry about this, many makers asserting that the standard was too high. Several high-class firms, however, did not hesitate to adopt the recommendations of the Society, and to guarantee their goods in accordance with it.

It was soon found that there was no difficulty whatever in coming up to the standard set, and, for many years past, there has been practically nothing to complain of. In my own experience, the cases for prosecution under the Fertilisers and Feeding Stuffs Act have been few and far between.

It is the more desirable, therefore, that the tendency to which I have referred, to put on the market cakes made from insufficiently screened seed, should be checked at the outset.

In certain cases also, more especially with cakes coming from abroad, I have found Castor Oil Bean to be present. In this connection it will be of interest to mention a case where a purchase, supposed to be of Oil-extracted Palm Nut Meal, turned out to be, not Palm Nut, but oil-extracted Castor Oil Bean. It has often been maintained that Castor Oil Bean Meal, if it has had the oil extracted, is harmless, and could quite well be used as a feeding material. In the case in point it had been given to stock, and, though supposed to be oil-extracted, had done considerable harm, a valuable sow having died.

I have always maintained that Castor Oil Bean, even if Oil extracted, is a dangerous material to use, inasmuch as it is impossible to guarantee that the extraction has been complete. The only safe thing, in my opinion, is not to use materials to which any risk attaches.

In Offals and Cereal meals I have found a great improvement, and this improvement is due, no doubt, to energetic and continued action in applying the Fertilisers and Feeding Stuffs Act. In several of the Counties with which I have had to do, special attention has been given to these matters, and with the good result that the quality and purity of offals and meals have greatly improved. Where such action has been taken, it is seldom that one meets with the mixture of rice-husk and other cereal husk that used to be so common. Even Barley Meal, which, owing to its high price, was a favourite one with which to incorporate other materials, can now be got of good and pure nature.

The mention of rice-husk causes me to refer more particularly to a case mentioned later in this report, in which a sample sold as "Rice Feeding-Meal" was found to be largely composed of the ground-up husk or "shudes" of rice. With this is compared a sample of genuine Rice Bran, the bran being really the skin of the rice grain which is removed in the process of "polishing" rice for use as human food.

Ground-Nut Cake has been considerably sought after, though the supplies of it have been somewhat short. On the other hand, Palm Nut Cake and Meal do not appear to have increased in favour, while one hears little now of Soya Bean Meal.

As regards Fertilisers, Basic Slag has remained in general favour, although, owing to changes in manufacture, it has not been possible to get, otherwise than occasionally, the high quality lots that one had before the war.

This has had to do with the introduction of, possibly, the one new material of the year, Nauru Phosphate. This is simply ground Phosphate of Lime found on certain islands in the Pacific which formerly belonged to Germany. The practical value of such ground phosphate applied direct to the land has, however, not as yet been satisfactorily established, and it is, to me, very questionable whether the Nauru Phosphate, or the admixture of it with Basic Slag known as "Slag Phosphate," is likely to replace either Superphosphate or Basic Slag, the practical values of both of which are fully recognised.

It is undoubtedly well that a trial should be given to such new materials or admixtures, but at present I could hardly go farther. I consider, moreover, that the mixing of Nauru Phosphate with Basic Slag and selling this as "Slag Phosphate," is likely to lead to a good deal of misapprehension, for farmers will naturally be inclined to think that the new material is a complete

substitute for Basic Slag, the value of which has already been established. The new plant may be a quite good one for using up Basic Slag of low quality, and turning out a material that reads as being high in phosphates. But, as I have said, its practical value has yet to be shown, and I think that it should be sold under a name which does not convey the impression that it is the same thing as Basic Slag.

In Nitrogenous Manures, Sulphate of Ammonia and Nitrate of Soda have continued to be the ones most commonly employed, and but little has been heard of Nitrate of Lime, Nitrate of Ammonia, or even Cyanamide.

Nitrogenous Organic Manures such as Shoddy, Dried Blood, etc., appear to have been freely used, but in many cases the prices charged have been very high. References to this are made later, cases occurring where the price per unit of Nitrogen has been more than double that of the same in the form of Sulphate of Ammonia. Dried Blood, for instance, is, at the time of writing, regularly quoted at 18s. 9d. per unit of Ammonia, while in Sulphate of Ammonia the unit price is 12s. 4d. only.

The use of Potash salts, however, has become more general, and the supplies have been, as a rule, of good quality.

Flue Dust, which never came greatly into favour, is seldom heard of now.

A new source of Potash, however, is likely to come forward from Leucit—or “Campanit” as it is now called—a mineral found in the lava districts of Italy, e.g. in the neighbourhood of Rome, Vesuvius, etc. This is, chemically speaking, a potassium silicate of alumina, but possessing the special feature that a considerable portion of the Potash is soluble in hydrochloric acid. Experiments conducted with it at the Woburn Experimental Station would seem to indicate that there is a value attaching to it which does not apply to the more insoluble forms of Potash, and that it is hardly inferior to Sulphate of Potash containing the same amount of Potash.

The advantage of liming the land continues to be recognised, and my experience in analysis of soils has shown me that, taking the country generally, nothing is so much required as liming, for the improvement of the soil. Reversion to an old and good practice has shown itself in the receipt of a number of samples of chalk and limestone, as well as of waste materials containing lime in more or less quantity. The analyses given later will show how these materials vary in quality. Unfortunately, as I have pointed out before, lime does not come within the scope of the Fertilisers and Feeding Stuffs Act, but it should certainly do so, and it is to be hoped that in any amendment of the Act this will be provided for.

The high price of burnt lime has induced, in many cases, a

trial of ground limestone, and experiments at Woburn and elsewhere have indicated that this may be a useful material. Whether, however, limestone, chalk, or some other form of lime than burnt lime be used in preference to the latter, is mainly a question of whether the materials be at hand or whether they come from a distance. When carriage by rail, carting, cost of application, etc., enter into account, it will, in my opinion, be still found that in most cases burnt lime is the more economical form in which to lime the land.

I comment now, as usual, on specific cases of interest which have occurred during the year.

#### A. FEEDING STUFFS.

##### 1. Linseed Cake.

Mention has already been made of the less satisfactory purity of these cakes as a whole. As an illustration I give the following :—

Moisture	8.95
Oil	14.85
<sup>1</sup> Albuminoids	29.06
Carbohydrates, etc.	33.43
Woody Fibre	8.12
<sup>2</sup> Mineral Matter	5.59
	100.00
<sup>1</sup> containing Nitrogen	4.65
<sup>2</sup> including Sand	.19

This was a rich cake, but it contained much weed seed. This consisted mainly of spurry, polygonum and wild mustard. The latter, indeed, was so marked as to give the cake a distinctly pungent taste. The cake had been purchased, in April, as "Imported Plate Linseed Cake," and cost £19 5s. per ton, delivered. After receipt of my report, a reduction of 10 per cent. on the bill was allowed to the purchaser.

In another instance the cake was not clean, but contained a good deal of weed seeds, principally polygonum. It also had 2.26 per cent. of sand, and contained some quantity of Castor Oil Bean. It had been given to cows, and, after using it, several of them scoured badly. I was, unfortunately, unable to get further particulars of this case from the member who sent me the cake.

##### 2. Cotton Cake.

As a rule, these have been of quite satisfactory nature. An exception was the following :—

Moisture . . . . .	10.40
Oil . . . . .	5.15
<sup>1</sup> Albuminoids . . . . .	24.62
Carbohydrates, &c. . . . .	27.80
Woody Fibre . . . . .	23.52
<sup>2</sup> Mineral Matter . . . . .	8.51
	100.00
<sup>1</sup> containing Nitrogen . . . . .	3.94
<sup>2</sup> including Sand . . . . .	4.48

This was a very "woolly" cake, and it contained excessive sand (4.48 per cent.). It cost, in April, £13 5s. per ton, delivered. In this case, also, an allowance of 10 per cent. on the bill was made.

*3. Ground-Nut (Earth-nut) Cake.*

Moisture . . . . .	10.28
Oil . . . . .	6.32
<sup>1</sup> Albuminoids . . . . .	51.12
Carbohydrates, &c. . . . .	25.37
Woody Fibre . . . . .	3.22
<sup>2</sup> Mineral Matter . . . . .	3.69
	100.00
<sup>1</sup> containing Nitrogen . . . . .	8.18
<sup>2</sup> including Sand . . . . .	.06

This was in good condition and very clean. It was very high in Albuminoids and low in fibre, being a very well decorticated cake.

*4. Palm Nut Meal (so-called).*

Moisture . . . . .	9.85
Oil . . . . .	1.13
<sup>1</sup> Albuminoids . . . . .	26.37
Carbohydrates, &c. . . . .	27.58
Woody Fibre . . . . .	29.42
<sup>2</sup> Mineral Matter . . . . .	5.65
	100.00
<sup>1</sup> containing Nitrogen . . . . .	4.22
<sup>2</sup> including Sand . . . . .	1.19

This is the case already referred to, where, though Palm Nut Meal was ordered and invoiced, the delivery was found to be nothing but oil-extracted Castor Oil Bean Meal with a little Wheat. Two tons had been purchased at £9 10s. per ton, and, on feeding with it, a valuable sow died. The sum of £45 was paid in settlement of the claim.

## 5. Rice Meal and Rice Bran.

	A.	B.
	Rice Meal.	Rice Bran.
Moisture . . . . .	9.32 ..	8.64
Oil . . . . .	7.11 ..	16.79
<sup>1</sup> Albuminoids . . . . .	12.06 ..	12.31
Carbohydrates, &c. . . . .	39.58 ..	47.73
Woody Fibre . . . . .	16.68 ..	4.76
<sup>2</sup> Mineral Matter . . . . .	15.25 ..	9.87
	100.00	100.00

<sup>1</sup> containing Nitrogen . . . . . 1.93 .. 1.97

<sup>2</sup> including Sand and Silica . . . . . 8.59 .. 1.59

A was sold as "Italian Rice Feeding-Meal" at £5 per ton f.o.r. at docks (London). It contained much of the husks or "shudes" of the rice grain ground fine.

B was a genuine Rice Bran consisting solely of the skin of the rice grain.

The term "bran" has often been applied to the husk or mixtures of the husk and true bran. The analysis given above shows what the composition of genuine Rice Bran should be.

## 6. Dutch Brown Beans.

Moisture . . . . .	13.71
Oil . . . . .	1.33
<sup>1</sup> Albuminoids . . . . .	24.25
Carbohydrates, &c. . . . .	52.28
Woody Fibre . . . . .	3.56
<sup>2</sup> Mineral Matter . . . . .	4.89
	100.00
<sup>1</sup> containing Nitrogen . . . . .	3.88
<sup>2</sup> including Sand . . . . .	.56

This was a home-grown sample, and quite good.

A sample, however, sold under the name "Rangoon Bean Meal," and costing, in February, £13 10s. per ton, was examined by me and found to contain cyanogenetic compounds which rendered it unsafe for feeding.

## 7. Offals.

	A.	B.
	Pearl Barley, "Beeswing."	
Moisture . . . . .	10.25 ..	9.90
Oil . . . . .	3.82 ..	.56
<sup>1</sup> Albuminoids . . . . .	13.87 ..	6.06
Carbohydrates, &c. . . . .	58.58 ..	54.84
Woody Fibre . . . . .	9.30 ..	24.64
<sup>2</sup> Mineral Matter . . . . .	4.18 ..	4.00
	100.00	100.00
<sup>1</sup> containing Nitrogen . . . . .	2.22 ..	.97
<sup>2</sup> including Sand . . . . .	1.56 ..	1.20

A was not nearly the equal of Barley Meal. It contained a great deal of husk. It cost £10 5s. per ton on rail, and was not only dear, but, because of the high amount of fibre, was not suited to pigs.

B cost £5 per ton f.o.r. It was low in Oil and Albuminoids, and contained very excessive fibre, being, like A, unsuitable for pig-feeding.

### 8. Miscellaneous Feeding Materials.

A.					
STARCH FIBRE CAKE.					
Moisture	.	.	.	.	52.24
Oil	.	.	.	.	2.6
<sup>1</sup> Albuminoids	.	.	.	.	1.06
Starch, &c.	.	.	.	.	42.42
Fibre	.	.	.	.	1.83
Mineral Matter	.	.	.	.	2.19
					100.00
<sup>1</sup> containing Nitrogen	.	.	.	.	17
B.					
SACCHARINE MEAL.					
Moisture	.	.	.	.	9.76
Oil	.	.	.	.	10.55
<sup>1</sup> Albuminoids	.	.	.	.	10.06
Sugar and other Carbohydrates	.	.	.	.	47.55
Woody Fibre	.	.	.	.	12.29
<sup>2</sup> Mineral Matter	.	.	.	.	9.78
					100.00
<sup>1</sup> containing Nitrogen	.	.	.	.	1.61
<sup>2</sup> including Sand	.	.	.	.	5.56
C.					
DRIED EGGS.					
Water	.	.	.	.	7.39
Oil	.	.	.	.	39.41
<sup>1</sup> Albuminoids	.	.	.	.	43.68
Other non-Nitrogenous organic matters	.	.	.	.	6.19
Mineral Matter	.	.	.	.	3.33
					100.00
<sup>1</sup> containing Nitrogen	.	.	.	.	6.99

A was prepared from rice. It was in moist lumps, and over one-half of it was water. It contained, however, nothing of harmful nature, and, considered purely as a starchy food, it could, if obtainable near at hand and cheaply, be quite well used for pig-feeding.

B, costing £7 per ton f.o.r., contained mineral matter and siliceous matter in quantity, and differed widely from the guarantee given with it, which was: Oil—22.16 per cent., Albuminoids—23.15 per cent.

C cost £18 per ton, which cannot be considered too much.

**9. Rat Poison.**

In "Occasional Notes" (November, 1921), I mentioned a case where a material used by a professional rat-catcher was sent to me for examination. I found it to consist merely of Barley Meal and White Arsenic, and the value of the purchase, which cost £4 per ton, was, at most, 5s.

**B. FERTILISERS.****1. Basic Slag.**

A sample sent me gave :

			Per cent.
Total Phosphates	:	:	36.70
Fineness	:	:	82.0

Twenty tons of this had been purchased with a guarantee of its containing 39.64 per cent. of phosphates. As the result of my report, an allowance of £5 16s. 8d. was made.

**2. Nauru Phosphate and Slag Phosphate.**

Samples of these analysed by me were as follows :

**(a) NAURU PHOSPHATE.**

	Per cent.	Per cent.	Per cent.
Phosphoric Acid	36.62	38.48	39.40
equal to tribasic Phosphate of Lime	80.01	84.07	86.09

**(b) SLAG PHOSPHATE.**

	Per cent.	Per cent.	Per cent.	Per cent.
Total Phosphates	41.32	47.50	55.34	51.82
Fineness	76.0	73.20	77.2	68.0

These were analyses of ordinary good samples of the materials in question ; in several cases, however, that have come under my notice, the fineness of grinding of samples of "slag phosphate" has been very defective. Particular attention should be paid to this important consideration.

Nauru Phosphate is a very high-grade phosphate, but tests which I have made with it indicate that less than 20 per cent. of the total phosphates are soluble in a 2 per cent. citric acid solution. This solubility is considerably less than that possessed by several other kinds of natural phosphate.

**3. Potash Salts.****A.**

	Found.	Guaranteed.
Potassium Sulphate	1.65	1.59
Sodium Sulphate, &c.	7.70	3.66
Sodium Chloride	76.22	77.80
Moisture	6.50	—
Carbonate of Lime	8.93	—
	100.00	

B.

	Per cent.
Potash . . . . .	5.62
Lime . . . . .	9.52
Siliceous Matter . . . . .	27.90
Moisture . . . . .	13.71

A was sold as "Waste Potash Salts," costing £3 5s. per ton at Bristol. It will be noticed that it did not contain one-half the amount of Potash guaranteed, and was little better than common salt.

B was Flue Dust guaranteed to contain 9 per cent. of Potash, and cost £4 10s. per ton at Grimsby. It, too, was much below quality.

4. *Shoddy, &c.*

A.

	Per cent.
Moisture . . . . .	9.76
Nitrogen . . . . .	4.87
equal to Ammonia . . . . .	5.92

B.

Moisture . . . . .	53.47
Organic Matter . . . . .	32.39
Oxide of Iron, &c. . . . .	12.87
Sand . . . . .	1.27
<hr/>	
	100.00

<sup>1</sup> containing Nitrogen . . . . .	4.49
equal to Ammonia . . . . .	5.46

C.

Nitrogen . . . . .	3.32
equal to Ammonia . . . . .	4.03
Sand . . . . .	37.63

A cost 65s. per ton f.o.r., a price by no means excessive. The only guarantee given, however, was one of its containing "1 per cent. of Nitrogen." Such a form of guarantee, as I have frequently pointed out, is one that should not be allowed, as it practically constitutes an evasion of the Fertilisers and Feeding Stuffs Act.

B was Hair Waste costing £6 per ton. This worked out at a unit price for Nitrogen of 26s. 8d., which is about double what it should be.

C was sold as Shoddy at £5 5s. per ton, the price being an extravagant one and working out at 31s. 6d. per unit of Nitrogen. In addition, the sample contained much sand and a quantity of weed seeds, this being objectionable inasmuch as the seeds are apt to germinate in the ground.

5. *Pig Manure and London Manure.*

London Manure is not often procurable now, but the comparison of a sample of it with one of Pig Manure made at home

will be of interest as showing the drier nature and higher quality of the London Manure :—

		Pig Manure.	London Manure.
Moisture	.	74.94	40.44
<sup>1</sup> Organic Matter	.	15.81	29.30
Oxide of Iron and Alumina	.	.66	2.55
Lime	.	1.34	2.03
Potash	.	.60	.57
<sup>2</sup> Phosphoric Acid	.	.57	.62
Carbonic acid, &c.	.	1.78	2.51
Sand	.	4.30	21.98
		100.00	100.00
<sup>1</sup> containing Nitrogen	.	.67	1.07
equal to Ammonia	.	.81	1.30
<sup>2</sup> equal to Phosphate of Lime	.	1.24	1.35

#### 6. Dove-cot Manure and Poultry Manure.

##### A.

###### DOVE-COT MANURE.

Moisture	.	.	.	.	.	.	27.16
<sup>1</sup> Organic Matter	.	.	.	.	.	.	43.63
Phosphate of Lime	.	.	.	.	.	.	6.75
Alkalies, Magnesia, &c.	.	.	.	.	.	.	6.81
Sand	.	.	.	.	.	.	15.65
							100.00
<sup>1</sup> containing Nitrogen	.	.	.	.	.	.	3.13
equal to Ammonia	.	.	.	.	.	.	3.80

##### B.

###### POULTRY MANURE.

Moisture	.	.	.	.	.	.	32.55
<sup>1</sup> Organic Matter	.	.	.	.	.	.	44.09
<sup>2</sup> Phosphoric Acid	.	.	.	.	.	.	1.62
Lime	.	.	.	.	.	.	1.74
Magnesia, Alkalies, &c.	.	.	.	.	.	.	3.89
Insoluble Siliceous Matter	.	.	.	.	.	.	16.11
							100.00
<sup>1</sup> containing Nitrogen	.	.	.	.	.	.	2.58
equal to Ammonia	.	.	.	.	.	.	3.13
<sup>2</sup> equal to Phosphate of Lime	.	.	.	.	.	.	3.53

A was made at home and was quite good, but B, which was sold at £6 per ton, must certainly be considered too dear.

7. Waste Materials.

A.

HORSE SLAUGHTER REFUSE.

Moisture	16.71
Organic Matter	18.96
Monobasic Phosphate of Lime	.79
(equal to Soluble Phosphate)	1.24
Insoluble Phosphates	14.25
Sulphate of Lime, &c.	29.77
Insoluble Siliceous Matter	19.52
	100.00

1 containing Nitrogen	1.14
equal to Ammonia	1.38

B.

BACON-CURING WASTE.

Moisture	1.11
Oxide of Iron and Alumina	17.30
Phosphate of Lime	2.14
1 Carbonate of Lime	29.64
Potash	5.05
Soda	4.75
Magnesia	.85
Sulphuric Acid, Chlorine, Organic Matter, &c.	7.17
Insoluble Siliceous Matter	31.99
	100.00

1 containing Lime	16.59
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A was offal treated with acid. It cost £8 per ton, which was quite double its value.

B. This was quite good of its kind, and worth about £2 a ton.

8. Lime.

	A.	B.	C.
	Lump Lime.	Ground Lime.	Burnt Lime.
Oxide of Iron and Alumina	.59	6.74	11.61
Lime	95.82	55.66	49.09
Magnesia	.57	1.14	24.94
Silica	.64	23.71	6.75
Water of Combination, Carbonic Acid, &c.	2.38	12.75	7.61
	100.00	100.00	100.00

A cost 47s. per ton delivered at Stourport and was of excellent quality.

B cost 55s. per ton, and was of inferior quality, containing much Silica.

C cost 51s. 11d. per ton delivered at Kidderminster, and was a Magnesian Lime, not suited to agricultural purposes.

9. *Limestone.*

	A.	B.
	Limestone Dust.	Ground Carbonate of Lime.
Oxide of Iron and Alumina . . . . .	1.09 ..	59
<sup>1</sup> Lime . . . . .	33.10 ..	54.88
Magnesia . . . . .	19.04 ..	27
Silica . . . . .	1.58 ..	2.49
Carbonic Acid, Water, &c. . . . .	45.19 ..	41.77
	100.00	100.00
<sup>1</sup> equal to Carbonate of Lime . . . . .	59.10 ..	98.01

A was called "Limestone Dust"; it will be seen that it contained a large amount of Magnesia. The material was quoted at 6s. 6d. per ton, loose in trucks, but, by the time it was delivered, the price would have come to 24s. per ton, which would make it not worth purchasing, especially considering the Magnesia present.

B was a quite good sample and cost 20s. per ton on rail, a not too-high price.

10. *Waste Lime.*

	A.	SUGAR LIME.
Moisture . . . . .	30.53	
Oxide of Iron and Alumina . . . . .	3.23	
Silica . . . . .	7.28	
Lime . . . . .	42.39	
Carbonic Acid, &c. . . . .	10.67	
	100.00	
	B.	FERTILISER.
Moisture and Water of Combination . . . . .	32.05	
<sup>1</sup> Carbonate of Lime . . . . .	65.92	
Magnesia, Alkalies, &c. . . . .	1.78	
Silica . . . . .	.25	
	100.00	
<sup>1</sup> containing Lime (CaO) . . . . .	36.91	

A was waste from a Beet Sugar factory, and could be got for from 5s. to 7s. 6d. per ton. Though moist, it was not lumpy, and, if near at hand, would be quite worth getting.

B, though sold as a special Fertiliser and costing 35s. per ton, was nothing more than a refuse from some manufacturing or water-softening process, and consisted, practically, of Carbonate of Lime. In view of its very moist condition and difficulty of application, it was very dear.

The following is a list of the samples submitted to me by members during the twelve months, December 1, 1920, to November 30, 1921:—

Linseed Cakes and Meals	.	.	.	.	.	12
Cotton Cakes and Meals	.	.	.	.	.	13
Compound Feeding Cakes and Meals	.	.	.	.	.	43
Palm-Nut Cakes	.	.	.	.	.	11
Ground-Nut Cakes	.	.	.	.	.	5
Cereals, Offals, &c.	.	.	.	.	.	46
Superphosphates	.	.	.	.	.	13
Compound Manures	.	.	.	.	.	17
Raw and Steamed Bones	.	.	.	.	.	18
Meat Meals	.	.	.	.	.	7
Fish Meals	.	.	.	.	.	16
Basic Slags	.	.	.	.	.	26
Slag Phosphates	.	.	.	.	.	6
Sulphate of Ammonia	.	.	.	.	.	8
Flue Dust	.	.	.	.	.	2
Potash Materials	.	.	.	.	.	5
Shoddy, Wool Waste, &c.	.	.	.	.	.	34
Refuse Manures	.	.	.	.	.	13
Lime, Chalk, &c.	.	.	.	.	.	23
Milk, Butter, &c.	.	.	.	.	.	28
Waters	.	.	.	.	.	28
Soils	.	.	.	.	.	54
Miscellaneous	.	.	.	.	.	20
Total	.	.	.	.	.	448

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## ANNUAL REPORT FOR 1921 OF THE BOTANIST.

### SEED-TESTING.

THE fact that seed is now purchasable under a guarantee of its purity and germinating capacity makes this section of the Botanical Department's work of less importance than formerly. Seed-testing during the year 1921 was practically confined to the seed of home-grown crops of wheat, oats, barley, red clover, sainfoin and rye—the order in which these are mentioned indicating their relative frequency. The one matter calling for comment was the prevalence of bunt in the wheat samples. Though in no case strikingly obvious to the unaided eye, a microscopical examination of the grain showed its presence in nearly one-third of the samples examined. In view of the fact that this easily controlled disease is undoubtedly increasing in this country steps will be taken in the future to examine all lots of wheat sent to the Department and should the spores of the

fungus be present the matter will be brought to the attention of the sender. Methods for destroying the germinating power of spores adhering to the grain are too well known to need description. But it is perhaps worth noting that bunt-infected seed wheat is particularly common in the south-west of England, and that, though all varieties of wheat grown here are susceptible to its attacks, samples of Victor are more frequently bunted than any other variety sent in to the Department.

In addition to the home-grown samples, about a dozen samples of purchased seeds, mostly of clovers, were tested in order to determine whether the germination percentage was up to the standard guaranteed. The tests came to an unfortunate end during the coal strike through the cutting off of the gas supply to the incubators one night.

#### WEEDS.

The weeds sent in for identification included two unusual species—the purple cow-wheat and wart cress. The former (*Melampyrum arvense*) is a plant rarely met with in this country, only occurring in a few localities in the south-eastern counties and in Norfolk. On the continent it is, in many parts, a fairly common corn-field weed. As its roots are partially parasitic on the roots of cereals, it becomes, where very prevalent, a serious pest. The plant is easily recognised by the curious colouring of the beautifully variegated flowering spikes. The bracts, which are bordered by slender teeth, are rosy pink in colour, gradually, however, changing to green as they age. The calyx of the flowers is purple and the corolla forms a red-tipped pink tube with a bright-yellow throat. There are no special reasons for considering that the plant is likely to spread to any extent in this country, but if it should be found on cultivated land it would be policy to uproot it before seed formation could occur.

The wart cress (*Senebiera coronopus*) is a common weed on waste land, especially perhaps in the eastern counties, and it is found, not infrequently, as a weed of arable land, where, however, it is rarely troublesome. In the case reported on the weed had evidently seeded itself down year by year, with the result that the soil surface was matted over with its tough, prostrate shoots to such an extent that the singling and cleaning of a late plant of mangel was an operation of considerable difficulty. The toughness of the stems and the still greater toughness of the tap-roots limited the use which could be made of the hoe, and finally hand-pulling had to be resorted to to clean the ground in the immediate neighbourhood of the plants.

Another somewhat uncommon weed reported on was viper's bugloss (*Echium vulgare*), which had taken possession of a field

of broad red clover. Though a common plant on the light sandy soils of many parts of the country, it is not often troublesome as a weed of arable land. As the plant is a biennial it should be easy to eradicate without adopting any special measures for the purpose. The main flowering stems and any breaking away from the base of the plant would be disposed of during the first and second cuttings of the clover crop, whilst the plough following the second cutting as soon as possible would dispose of the impoverished root system.

The wild carrot (*Daucus carota*) was sent to the Department on one occasion with the unusual complaint that it was so abundant that it was ruining a grass-field. On further inquiry it was found that the field was a clover ley which had been left down two years previously in the hope that it would form the basis of a permanent turf. In all probability the clover seed sown originally had contained a small quantity of the seeds of wild carrot, for it is met with frequently as an impurity. Some conditions or other had favoured the development of the weed, and it had seeded down abundantly the year after the ley should have been broken up. A curious feature of the case was that the plant was not known locally as a weed and the soil of the invaded field—a particularly stiff clay—was one which one would not have anticipated as suitable for a plant which, on the whole, seems to prefer the lighter types of soil.

The remaining weeds reported on, in most cases several times, were the common species mentioned in previous reports. The one unusual feature the list shows is the complete absence of inquiries regarding spurrey, its usual place at the head of the list being taken by the wild onion.

In addition to the identification of weeds, the identification of a few varieties of the various cereals was called for. These consisted mainly of "rogues" from crops of wheat and barley. No less than six of these were specimens of six-row barley, which had been found in crops of wheat.

In only one case was the identification a matter of any importance. A member had purchased a supply of seed wheat described as Red Marvel. This, when spring sown, at a date suitable for this variety, failed to mature, and though the unripe ears could not be identified with certainty, it was perfectly clear that they were not ears of Red Marvel. The mal-description had consequently resulted in the loss of a crop.

#### FUNGOID DISEASES.

In spite of the difference in the climatic conditions of the two seasons, the number of inquiries dealing with the subject of plant diseases this year was about the same as in the previous one. The result was unexpected, for personal experience indicated

that fungoid diseases, as a whole, were less prevalent than usual, and that, where present, their attacks were less severe than is ordinarily the case. The attacks of the potato blight (*Phytophthora infestans*), for instance, caused far less damage this season than has been the case for many years, a fact reflected in the complete lack of inquiries for measures for controlling this disease. As an exception to this generalisation, bunt or stinking smut of wheat has been far more abundant and destructive than usual. Whether this is due to any extent to the exceptional climatic conditions of 1921 or not, it is difficult to say. But if one may judge from the prevalence of the spores of this fungus in samples of seed wheat, the practice of dressing wheat before sowing has not been carried out nearly as extensively as it should have been. In all probability this is a legacy of war-time conditions of cultivation, when the difficulties of farming led to the abandonment of operations not considered by many to be absolutely essential. The results are now seen in the yearly increase of the losses due to bunt. At present it is no exaggeration to say that the wheat stocks of this country are thoroughly permeated with the disease, and were it not for the ease and certainty with which it can be controlled, one could count upon an outbreak which would cost the country millions of pounds.

The inquiries about the diseases of fruit trees outnumbered those concerned with farm crops. Those dealt with most frequently were mildew, scab and brown rot of apples, brown rot and the pocket disease of plums, and "dieback" on plums and gooseberries. A particularly severe attack of mildew on half-grown peaches had unfortunately ruined the crop before preventive measures were inquired for.

The diseases of farm crops were much the same as those reported on in previous years, the only one needing special mention being the wart-disease of the potato. Specimens of this were received from Lincolnshire. This outbreak, occurring near the great potato-producing area of the Fens, may prove a particularly unfortunate one. Naturally enough the effects of the drought on crops, especially of barley and late-sown oats, were frequently ascribed to the attacks of disease, and curative measures were asked for on several occasions.

#### CROP INQUIRIES.

The partial failure of clovers and grasses from the same cause led to more inquiries than usual on the value of various fodder crops and of methods of cultivating them. Information regarding the notoriously drought-resistant lucerne was asked for on no less than fourteen occasions in July alone. The difficulty of establishing a plant of clover in 1921 was indicated by a number of inquiries immediately after harvest concerning the crimson or

Italian clover, whilst the drying out of a crop of broad red clover at the stage when normally it should have been at its maximum growth led to correspondence on the relative merits of this variety and the single-cut clover or cow-grass. As the outcome of an examination of a sample of the soil and of data regarding the local rainfall, the growth of kidney-vetch in place of either of the red clovers was finally suggested. The shortage of keep in the autumn focused the attention of some members on the advisability of growing in the future a small breadth of maize, if only as an emergency crop. Information was easily provided with regard to varieties, seed rate and time of sowing, but the resources of the Department broke down over one inquiry asking for the protein content of the fodder of a number of varieties the names of which had been found in an American catalogue.

#### GENERAL INQUIRIES.

The miscellaneous items of information not classifiable under the several headings given above generally provide the most interesting work falling to the lot of the Department. This year few subjects of general interest were dealt with. One of some importance dealt with the methods of estimating the value of wheat, the question arising after an attempt had been made to place three samples in their order of value, with a result which did not meet with the Members' approval. In the long run, the actual value of a given lot of wheat can only be determined by means of milling and baking trials, though an approximate idea can usually be obtained by chemical analyses. Neither of these methods is available under the ordinary conditions of marketing, and in practice the buyer trusts his judgment. Generally speaking, if samples are well harvested and undamaged, preference is given, without very much reason for it, to those in which the grain is translucent rather than obviously floury. As there is little to choose—from the miller's point of view—between most English wheats, he is not likely to make very serious mistakes.

But exceptional cases occur at times, particularly on experimental stations where various dressings of artificial manures are under test, with the result that the most experienced judges are often hopelessly at fault. In the long run, the best valuer is the one who recognises the variety of wheat from the appearance of the sample and knows how it behaves in the mill and bakehouse. The frequency with which the name of the variety is now asked in the corn exchanges is an indication that this fact is gradually being appreciated.

Suitable mixtures of seeds for feeding canaries was the subject of an unusual inquiry only to be answered after a rough botanical analysis had been made of several packets of seed sold for this purpose.

The value of fenugreek in feeding cakes and meals, the uses to which the screenings of grass seeds could be put, and the methods for crushing linseed, were further inquiries of a more or less botanical nature.

In addition, there was the usual demand for information on the preparation of fungicides chiefly for combating the diseases of fruit trees.

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## ANNUAL REPORT FOR 1921 OF THE ZOOLOGIST.

### INTRODUCTION.

As might be expected, the unusual weather conditions of the past year have strongly influenced the work of the Zoological Department. To state the matter briefly, spring pests made a very early appearance; in the height of summer the direct effects of the drought made insect attacks relatively unimportant, and no great interest was evinced in them; in the autumn complaints became numerous and continued to an unusually late date. Rape being destroyed by turnip-fly in March, and celery beginning to be attacked by celery-fly in October, are instances of the great prolongation of the normal season. *Aphis* has been destructive on all crops; underground pests like wire-worm and leather-jacket have been about as abundant as usual, but it has been an especially bad year as regards surface caterpillars. Some common pests did little harm at the time when they are normally destructive, but second or third broods made their appearance at a later date. Fruit pests seemed to be the least affected by the remarkable weather conditions, and the list of those complained of differs little from that of an average season.

Much time has been occupied in investigating the mite recently found to be parasitic in the breathing tubes of bees, and regarded as the probable cause of bee disease, and experiments are in progress designed to throw light upon the normal methods of infection. Much research on this matter is still necessary, and the prevalent belief that the discovery of the mite finally disposes of the question of bee disease is quite unjustified.

*Cereals.*—In the spring there were complaints of damage to corn crops by wire-worm, leather-jacket and slugs. Frit-fly was, in some localities, very destructive to late-sown oats, but in most districts it was reported as not so troublesome as usual. Gout-fly occurred pretty widely in barley during the summer, but few bad cases of wheat bulb-fly were reported.

At the time of writing the Zoologist's Report for 1920 the investigations of this pest, which had been carried on at Cambridge since March, were not quite concluded, and it was premature, therefore, to give the complete life-history of the fly. This may now be attempted, and it will be seen that it is quite in accordance with the experience of practical farmers.

The flies begin to appear at the beginning of June; in the laboratory experiments nearly all the flies emerged from their chrysalids between June 1 and June 11, but it is known that the emergence may be delayed till July. They pair, and the females lay eggs in bare soil, at a depth of about one-eighth of an inch, during July and August. Most of these eggs remain unhatched till the following spring, though a few may hatch in the autumn. On hatching, the grubs seek out the wheat plants and penetrate the central shoot, in which they feed and which they eventually kill. A single grub may attack several wheat plants in succession.

They go through three stages, undergoing two moults, but it is not often that the wheat shows any sign of injury till the grub has reached its third stage. Indeed, until Mr. Petherbridge obtained it in the Cambridge experiments the first-stage larva of the wheat bulb-fly was unknown. As mentioned in last Report, a Russian entomologist, Kordiumoff (or Kurdjunov) had described what he believed to be the first-stage larva of this fly, but he was mistaken in the species.

Second-stage larvæ have been found in wheat on the University farm in February. In April the third stage is reached, and crops begin to suffer visibly. When the grubs are fully fed, in May, they leave the wheat and pupate in the soil, an inch and a half or two inches deep.

There is thus only one brood in the year, and the whole time from August to the spring is passed in most cases in the egg stage. The most striking fact in this life-history is that the flies lay their eggs in bare soil—a most unusual habit for insects addicted to a particular crop. It explains, however, perfectly well why, as is always observed, bad attacks of wheat bulb-fly always follow a bare fallow.

*Fruit.*—The effect of the drought on insect pests was less marked in this section than in any other. *Aphis* and red-spider attacks were intensified, and in some cases there were autumn attacks by second broods of insects, which normally appear only once in the season, but for the most part the complaints received from various quarters were much as usual.

Many apple pests were reported. Winter moth was perhaps less troublesome than in most years, but it appeared at a very early date. So did apple-sucker and apple-blossom weevil, which were widely injurious. In Kent orchards the place of winter-moth seems to be largely and increasingly taken by a

small case-bearer moth, *Coleophora nigricella*, against which Mr. Theobald finds that winter washes are useless, but that nicotine washes at the time of attack are highly effective.

Some cases of mussel-scale were reported, and early in the season woolly aphis seemed to be on the increase, but it was noted in some districts that the hot weather did not favour this pest and that the attack gradually died out. Leaf blister mites were very injurious. The pear-leaf blister mite (*Eriophyes pyri*) also attacks the apple, but this year another species, *E. malinus*, has been found for the first time in England attacking apple leaves in Kent and in Hampshire, and its appearance may be looked for elsewhere. It is to be recognised, according to Mr. Theobald, by a rosy-pink velvety growth on the leaves, which later turn brown and die. The same authority notes that it spreads rapidly on attacked trees, but not rapidly from one tree to another.

On an apple twig sent me from Bristol in October there were large numbers of an Eriophyid mite crawling about and apparently seeking winter quarters. I supposed at first that it was one of those just mentioned, but careful examination showed it to be a *Phyllocoptes*. Many of the "nail-galls" on forest trees are due to mites of this genus, though none in England is known to infest apple trees. There is, however, one such mite, *P. schlechtendali*, in central Europe, and it is possible that it may turn out to be this species, with the description of which it seems to agree. These mites are, however, most easily recognised by the galls they make, and at present *Phyllocoptes* galls on the apple have not been observed.

Bush-fruit pests have been numerous. Gooseberries suffered from saw-fly and red-spider, and raspberries from raspberry-beetle and bud-moth. There was much aphis, and one case is worth noting. A severe attack appeared on gooseberries and it was proposed to spray them, when close examination showed that multitudes of ladybird grubs had taken the matter in hand and that scarcely an aphis remained alive. The bushes were left alone and the disease entirely disappeared without treatment.

The extermination of the disease of big bud in black currants seems as far off as ever, but Mr. Goude has devised a method of obtaining mite-free plants from infested bushes which deserves to be widely known. In my investigation of this pest, the account of which appeared in the Report for 1901, it was shown that the migration of the mite to the new buds takes place, in ordinary years, about the second week in June. In May, therefore, the new shoots are not yet attacked, even on badly diseased bushes. Mr. Goude takes these new shoots, dips them in an aphis wash to destroy any wandering mites, and strikes them in a frame, and he finds that they grow so vigorously in the absence

of the mite, and that they are ready for planting out in September. It is almost impossible to obtain black-currant cuttings from mite-free plants, but this ingenious method of propagation overcomes that difficulty, and it should be widely practised.

*Roots and Garden Crops.*—Roots suffered so much from the drought that insect attacks were comparatively unimportant. Turnip-fly made a very early appearance and was highly destructive, and later on much harm was done by surface caterpillars. These grubs are annually the cause of great loss to many crops, and their underground habits make them very difficult to deal with. The American plan of catching them by poison baits—usually bran and Paris green—is looked at askance in this country, where people are loth to distribute deadly poison broadcast. It is alleged, however, that the quantity advocated is so small—1 lb. Paris green to 20 lb. bran per acre—that it is most unlikely that any animal or bird could collect enough to poison itself, and it certainly accounts for many of the caterpillars. Poultry have been used with effect in combating this pest in some instances. If folded on the field during cultivation they destroy thousands of the caterpillars.

There were many complaints of gall-weevil in cabbage and turnips, and aphis was plentiful here as elsewhere. The absence of certain common pests was, however, remarkable. Cabbages suffered very much less than usual from the caterpillars of the white butterflies, and celery was unusually free from celery-fly during September, when that pest is generally at its worst. Signs of attack began to be observable in October—a very late date for the fly to be at work—but in most cases little harm was done.

Most gardeners must have been struck by the vast numbers of "snowy-fly" (*Aleurodes*) infesting all plants of the cabbage tribe, especially in October. In no previous year have I seen them so abundant. These minute insects, which are nearly allied to the green-fly and the scale insects, rise in clouds when a plant is touched, but settle again immediately. Two common species are now recognised. *A. brassicae* attacks the brassicas; *A. vaporariorum* is chiefly injurious to tomatoes under glass, but does not confine its attention to these plants. The hot-house species is best dealt with by fumigation, but the snow-fly of the cabbage is difficult to get rid of, and there is little to be done except to strip off and burn the diseased leaves. Fortunately in most cases the injury to the plants is not very serious.

*Forest Pests.*—Comparatively few applications had reference to forest pests, and of those which were received, most had reference to aphis attacks of various kinds. These, of course, included larch-bug, and in one case there was a complaint of *Lachnus viminalis* on willow.

A correspondent asked advice with regard to a plague of

beetles infesting his house, and, as he feared, likely to damage the furniture. He had traced them to an out-house where a quantity of ash timber was stacked. The beetle turned out to be the ash-bark beetle, *Hylesinus fraxini*. This is quite harmless as regards furniture or dry timber, but the stack was a source of danger to all the growing ash trees in the neighbourhood, and it was highly desirable that the bark should be stripped off and burnt.

As might be expected in such a hot season, red-spider on lime trees (*Tetranychus tiliaum*) was prevalent.

*Bee Disease.*—In 1920 Dr. Rennie announced that he had discovered a mite, parasitic in the breathing tubes of bees, which he believed to be the true cause of Isle of Wight disease, which had been previously attributed to quite a different agency. The discovery was most important, but it is very unfortunate that many people should have been led by its announcement to believe that the matter is now settled and no further research is necessary. There are many points which are by no means clear, and there is no immediate prospect of our knowledge being so complete that further investigation is superfluous.

It will probably be best to drop the term "Isle of Wight disease." Beyond the fact that there was a sudden large mortality in a hive, the symptoms were obscure and not always present. The mite was not found in the original cases of so-called Isle of Wight disease, and there are no means now of determining whether it was present. That there is a widespread disease of bees in some way associated with the mite is now certain. Bees from a very large number of hives all over the country have been examined during the last two years—thousands of bees in Cambridge alone, and at many other centres research is proceeding—and there is a general accordance between the presence of the mite and the incidence of a very fatal type of bee-disease. But there are many difficulties. Bees die with all the usual supposed signs of the disease about them—crawling, constipation, dislocated wings, &c.—and are found on examination to contain no mites. On the other hand active bees, able to go about their business, are often found to be heavily infested. Nevertheless it remains true that a hive, members of which are found to harbour the mite, will go from bad to worse and will ultimately die out. Whether the bees have to be diseased before the mites can gain entrance to their breathing tubes, or whether the mites are the first cause of the disease, we do not know, but at least it is clear that as the proportion of mite-infested bees in a hive increases, so does the mortality. As to the mite itself, all its stages have been studied and are now quite well known, but precisely how and when it gets from bee to bee remains to be discovered. Infection experiments have

been and are being made at Cambridge, and no doubt elsewhere, but so far little light has been thrown on the matter. The foregoing brief account will, it is hoped, make it abundantly clear that the time has not yet arrived for us to congratulate ourselves that all is now known and further research is unnecessary.

*Miscellaneous Notes.*—It happens that during the past year a good many inquiries have had reference to spiders. In most cases nothing was alleged against them, but information was desired as to their identity or some peculiarity of habit. Occasionally, however, they were suspected of doing harm—of injuring carpets, for instance. The carpets when unrolled were found to be damaged, and spiders were observed hidden within their folds. More often the eggs of spiders, found under the leaves of fruit trees, are taken for those of some moth or other destructive insect.

Spiders are all carnivorous, living on the juices of insects, but as they do not discriminate between useful and injurious insects, they may be regarded as neutral in relation to agriculture. I know of only a single authenticated case of any harm whatever being done to plants by a spider, and this I recorded in the "Miscellaneous Notes" in my report for 1912. A spider which I identified as *Marpessa muscosa* had been observed tearing the blossoms of cucumber plants and sucking the nectar.

Spiders' eggs can always be recognised by the fact that they are enclosed in a cocoon of silk. It is for the protection of the eggs that spiders spin cocoons. The cocoon of an insect, such as a moth, is entirely different. It is spun by the caterpillar for the protection of the chrysalis into which it is about to turn.

It is not rare to have an incredible number of small insects invading a room in the summer, and there are curious cases of particular rooms and buildings being especially susceptible to such invasions, which do not occur with any regularity, but at quite uneven intervals. In my report for 1919 the case of a minute parasitic insect, *Pteromalus deplanatus*, was mentioned. It is one of the most remarkable of these "swarming" insects, and the origin of the vast numbers which sometimes take refuge in a room was always a puzzle. I mentioned that the suggestion had been made that it possibly was parasitic on the oak tortrix, and this proves to be the case, for Dr. Hugh Scott of Cambridge this year bred it from oak tortrix caterpillars.

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THE WOBURN EXPERIMENTAL  
STATION OF THE ROYAL AGRICULTURAL  
SOCIETY OF ENGLAND.

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FIELD EXPERIMENTS, 1921.

The season 1920-21 was one that will long be remembered because of the exceptionally dry summer, amounting in many parts to a severe drought.

At Woburn, as elsewhere, this was acutely felt. The total rainfall for the year was 14.50 inches only, with 171 days of rain, as against 25.12 inches with 224 rainy days in 1920. October, November and December of 1920, as well as January, 1921, were all drier than in the previous season. There was some snow in December, and a few severe frosts, but none of these lasted long. January was abnormally mild. February was drier than had been the case for years, and was also very mild. This favoured the working of the land, and the season throughout was an exceptionally good one for the cleaning of land.

March, again, was very favourable, it being showery, and favouring crop growth, so that the winter-sown wheat established itself well.

April was marked by warm winds which largely deprived the soil of its moisture. A fine and dry May followed. The winter wheat continued to grow well, having obtained a good hold of the ground. Spring-sown crops, however, suffered very

much. The hay crop was very short, and the root crops were a failure, or nearly so, owing to the difficulty of obtaining a plant, through insufficient moisture.

June proved an excellent hay-making month, but, owing to the drought, the seeds of root crops sown failed to germinate. Through early sowing, a fairly good crop of mangolds was obtained, but the swede crop failed practically over the whole of the farm.

Potatoes also were a very light crop.

The dry weather continued throughout June, July and August, with the result that the spring-sown corn was poor and short in straw.

The harvest was an exceptionally early one, and most of the corn was cut by the end of July.

#### CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*), 1921 (45TH SEASON).

The chief operations were as follows:—

1920, Oct. 7.—Farmyard manure given to plot 11b.

The manure contained 612 per cent. of nitrogen; the quantity applied per acre, in order to give 100 lb. of ammonia, was 6 tons, 0 cwt. 0 qrs. 16 lb.

„ Oct. 15.—Mineral manures applied (plots 4, 5, 6, 8, 9, 10a, 11a). “Yeoman” Wheat drilled, at 10 pecks per acre.

„ Nov. 24.—Rape dust applied to plot 10b (5.17 per cent. nitrogen), the quantity given per acre being 398 lb. in order to supply 25 lb. of ammonia.

1921, April 12.—First top-dressings of sulphate of ammonia and nitrate of soda put on.

„ May 12.—Second top-dressings given.

„ July 29.—Wheat cut.

„ Aug. 9.—Wheat carted and stacked.

„ Sept. 23.—Wheat threshed.

„ Nov. 3-5.—Corn dressed and weighed.

As in 1920, rape dust was put on in the autumn when the wheat was sown, and not in spring as in the earlier years of the experiments.

The top-dressings of sulphate of ammonia and nitrate of soda were also put on about a month earlier than usual, it being felt that, hitherto, these applications may have been put on unnecessarily late. The result, however, did not appear, because of the exceptional season, for there was no rain to wash in the soluble salts, nitrate of soda and sulphate of ammonia. Sulphate of ammonia, e.g., lay for several weeks on the surface of the ground, and had no rain to wash it in.

The harvest results are given in Table I, below.

*The Woburn Field Experiments, 1921.*

TABLE I.—*Continuous Growing of Wheat, 1921 (45th Season).*  
(Wheat grown year after year on the same land, the manures being applied  
every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head Corn		Tall corn		Straw, chaff, &c.
		No. of bush.	Weight per bushel	Weight	Lb.	
1	Unmanured . . . . .	5.8	62.5	3	4	1 8
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	2	1 0	16
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909, 1910 and 1911 . . . . .	5.4	62	4	5 3	4
2b	As 2a, with 2 tons lime, Dec., 1897 . . . . .	8.0	60	4	6 2	16
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905 . . . . .	9.9	62	4	10 0	0
3a	Nitrate of soda (=50 lb. ammonia)	17.7	61	10	13 3	24
3b	Nitrate of soda (=25 lb. ammonia)	14.6	61.7	9	12 2	4
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, $\frac{1}{2}$ cwt.)	8.9	63	4	6 3	18
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia) . . . . .	8.1	60	4	6 1	0
5b	As 5a, with 1 ton lime, Jan., 1905 . . . . .	14.7	62.5	5	15 1	18
6	Mineral manures and nitrate of soda (=25 lb. ammonia) . . . . .	20.4	61.8	10	16 3	9
7	Unmanured . . . . .	10.2	62.5	6	7 1	21
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia) . . . . .	6.8	63	4	6 0	24
8aa	As 8a, with 10 cwt. lime, Jan., 1905, repeated Jan., 1918 . . . . .	11.4	62	6	9 3	12
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years) . . . . .	5.1	61	6	4 2	0
8bb	As 8b, with 10 cwt. lime, Jan., 1905, repeated Jan., 1918 . . . . .	11.5	58	6	10 1	20
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia) . . . . .	24.9	62	6	20 0	4
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years) . . . . .	13.2	62.3	6	11 0	16
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia) . . . . .	10.8	62	4	8 0	8
10b	Rape dust (=25 lb. ammonia) . . . . .	13.0	62.4	6	10 2	0
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia) . . . . .	14.3	62.5	4	11 1	4
11b	Farmyard manure (=100 lb. am- monia) . . . . .	33.5	63	11	28 3	16

In a season of such exceptional drought as that of 1921, the action of manures, more particularly that of soluble nitrogenous salts, could not be expected to tell with any regularity. Accordingly, the results are not dealt with in such detail as is usual.

Nitrate of soda, being more rapid in its action than sulphate of ammonia, told rather the better. The application of sulphate of ammonia was, to a large extent, without result.

A remarkable, but not unexpected, feature was the comparatively high return obtained in such a year from the use of farmyard manure. As has been shown on these plots, it is in a dry season that farmyard manure, mainly by its power of retaining moisture in the land, proves far superior to any other dressing or any combination of artificial manures, even when lime be added. The produce obtained with it was 33.5 bushels of corn, with 29 cwt. of straw per acre. This was an exceptionally high yield for the land, being well above the average, and double the crop of 1920. The yield of corn was 9 bushels per acre more than that of any other plot. The rape dust, which generally gives a yield equal, or nearly so, to that of farmyard manure, was comparatively inactive, the yield of corn being only 13 bushels per acre.

The unmanured plots averaged 8 bushels per acre, the same as in 1920.

The duplicate plots were not as near to one another in yield as could have been wished. The increase with mineral manures alone was under 1 bushel per acre.

The corn was valued as usual. Taking the average price at 48s. to 49s. on rail, five lots (1, 6, 9a, 10b, 11b) were quite up to the average of the year, and stood out from the others. It will be noticed that one of these was an unmanured plot, another the farmyard manure plot. The worst plots were those where sulphate of ammonia or nitrate of soda were used without minerals.

#### CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*), 1921 (45TH SEASON).

The chief operations were as follows:—

1920, Oct. 27.—Nov. 4. Land ploughed.

1921, Jan. 5.—Lime applied to lower halves of plots 3a and 3b.

„ Feb. 1-4.—Second ploughing of land.

„ April 4.—Farmyard manure applied to plot 11b.

The manure contained 62.9 per cent. of nitrogen; 5 tons 16 cwt. 3 qrs. 12 lb. per acre were required to supply the necessary 100 lb. of ammonia.

1921, April 4-7.—Third ploughing of land.  
 „ April 21.—“Chevalier” Barley was drilled at the rate of 10 pecks per acre. Mineral manures applied the same day, and also rape dust to plot 10b. The rape dust contained 5·14 per cent. of nitrogen, 400 lb. per acre being required to supply the 25 lb. of ammonia.  
 „ May 12.—First top-dressings of sulphate of ammonia and nitrate of soda applied.  
 „ June 1.—Second top-dressings applied.  
 „ Aug. 24.—Barley cut.  
 „ Aug. 26.—Barley carted and stacked.  
 „ Sept. 23.—Barley threshed.  
 „ Nov. 3-5.—Corn dressed and weighed.

There was one small alteration made this season in the plan of experiment. It had been for some time noticed that plots 3a, 3b (nitrate of soda alone) were declining, while the produce kept up on plot 6 where minerals were used as well. Bearing in mind that, where sulphate of ammonia was used in the absence of lime, the crop failed altogether, it was decided to ascertain whether the tendency of nitrate of soda to produce decline of yield might not similarly be associated with the want of lime. It was therefore determined to put lime, at the rate of 2 tons per acre, on the lower halves of the plots 3a, 3b. These limed portions henceforward figure as 3aa, 3bb respectively.

The harvest results are given in Table II, page 281.

The barley crop was very poor throughout. It suffered greatly from the drought. The manurial applications, as a whole, failed to tell, and, as in the case of wheat, nitrate of soda was somewhat superior to sulphate of ammonia. The highest yield, as in the case of the wheat, was with farmyard manure, this being 20·6 bushels of corn and 13 cwt. of straw per acre. This yield was not, however, nearly up to the 33·4 bushels of corn obtained in 1920.

The unmanured produce was 5·7 bushels of corn per acre, this being 2 bushels below the yield of 1920; the duplicates agreed very well.

Sulphate of ammonia was practically without effect, and the application of lime on the new nitrate of soda plots 3aa, 3bb, had not time or opportunity for telling.

The barleys were valued, but were reported to be so low in condition and quality that none would go for malting. The samples were green and immature. They, further, all contained smut. There was little to choose between the different lots.

TABLE II.—*Continuous Growing of Barley, 1921 (45th Season).*  
(Barley grown year after year on the same land, the manures being applied  
every year.)

Plot	Manures per acre	Stackyard Field—Produce per acre.			Straw, chaff.	
		Head corn		Tail corn		
		No. of bush.	Weight per bush.			
1	Unmanured . . . . .	6.1	49.8	Lb.	C. q. lb.	
2a	Sulphate of ammonia (=25 lb. ammonia)	1.2	50	1	5 2 16	
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909, 1910, and 1912 . . . . .	1.3	50	—	3 12	
2b	As 2a, with 2 tons lime, Dec., 1897, repeated 1912 . . . . .	6.6	51	—	1 2 8	
2bb	As 2a, with 2 tons lime, Dec., 1897, repeated Mar., 1905 . . . . .	2.8	51	4	6 1 20	
3a	Nitrate of soda (=50 lb. ammonia)	4.5	50	2	4 1 4	
3aa	As 3a, with 2 tons lime, Jan., 1921 . . . . .	4.5	50	4	4 1 12	
3b	Nitrate of soda (=25 lb. ammonia)	4.9	49	4	4 1 12	
3bb	As 3b, with 2 tons lime, Jan., 1921 . . . . .	4.8	51	3	4 3 4	
4a	Mineral manures <sup>1</sup> . . . . .	9.1	49.8	4	8 2 12	
4b	As 4a, with 1 ton lime, 1915 . . . . .	11.0	51.3	3	7 1 18	
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia) . . . . .	4.8	51	2	2 2 24	
5aa	As 5a, with 1 ton lime, Mar., 1905, repeated 1916 . . . . .	8.4	51	4	7 2 20	
5b	As 5a, with 2 tons lime, Dec., 1897, repeated 1912 . . . . .	4.8	51	2	3 2 24	
6	Mineral manures and nitrate of soda (=25 lb. ammonia) . . . . .	10.5	50.2	2	7 2 2	
7	Unmanured . . . . .	5.3	50	2	3 1 6	
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia) . . . . .	2.3	52	2	1 2 8	
8aa	As 8a, with 2 tons lime, Dec., 1897, repeated 1912 . . . . .	10.0	52	4	7 3 12	
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years) . . . . .	2.3	53	1	1 2 8	
8bb	As 8b, with 2 tons lime, Dec., 1897, repeated 1912 . . . . .	8.3	52	2	8 3 12	
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia) . . . . .	12.6	50.8	4	10 0 12	
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years) . . . . .	12.9	51.8	3	8 3 14	
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia) . . . . .	10.0	51.5	3	5 2 12	
10b	Rape dust (=25 lb. ammonia) . . . . .	5.9	54	2	5 0 6	
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia) . . . . .	10.6	51.3	3	8 1 16	
11b	Farmyard manure (=100 lb. ammonia) . . . . .	20.6	52	5	13 1 8	

<sup>1</sup> Superphosphate 3 cwt., sulphate of potash  $\frac{1}{2}$  cwt.

ROTATION EXPERIMENTS—THE UNEXHAUSTED MANURIAL VALUE OF CAKE AND CORN (*STACKYARD FIELD*).*Series C, 1921, Wheat after Red Clover.*

The red clover crop of 1920 had given two quite good hay crops, over  $2\frac{1}{4}$  tons per acre altogether.

After the second crop had been taken, the land was ploughed, September 23–24, and "Yeoman" wheat, at the rate of 9 pecks per acre, was drilled on October 8, 1920, without any further manuring. The wheat grew very well despite the dry season, and the crop was ready to cut by July 21, 1921. It was carted and stacked on August 9, being threshed on September 22. The weights are given in Table III.

TABLE III.—*Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn. Series C (STACKYARD FIELD), 1921—Wheat after Red Clover.*

Plot		Head corn			Tall corn	Straw, chaff, etc.
		Weight	Bush.	Weight per Bush.		
1	Corn-fed Plot . .	Lb. 2,317	37.4	Lb. 62.0	Lb. 366	C. qr. 34 0 5
2	Cake-fed Plot . .	1,919	31.2	61.5	431	32 0 4

The yield was good for the land, the highest being 10 bushels more per acre than was recorded the previous year (Series D), and 4 bushels more per acre than the highest (farmyard manure) plot of the continuous wheat series of 1921.

The corn-fed plot again gave a higher return than the cake-fed plot. This has been the case with each crop of the present rotation, and so gives further indication that the belief in the extra value of cake over corn in feeding on the land is not borne out in the case of the Woburn soil.

The corn was reported as being very nice, the samples being quite up to the average of the year. They were strong, well-grown and uniform in colour.

*Series D, 1921, Swedes after Wheat.*

Basic slag at the rate of 5 cwt. per acre was given in May, 1921, and swede ("Darlington") seed was drilled on June 7 at the rate of 4 lb. per acre. Owing to the drought, the seeds never germinated properly, and the result was that the produce only reached about  $2\frac{1}{2}$  tons on the 4 acres. This being insufficient to feed on the land, the roots were pulled up, carted, weighed and removed instead of being fed on the land as usual.

## GREEN-MANURING EXPERIMENTS.

## (a) STACKYARD FIELD. Series A.

Wheat having been the crop in 1920, green crops were sown in 1921. The land (4 acres), after twice ploughing, was drilled on 2 acres with tares, April 22, and 2 acres with mustard on May 31.

Owing to the drought, the crops were rather short, but were sufficient to feed off, sheep being put on them July 16-26, these receiving also 1½ cwt. of cotton cake per acre. After this the land was ploughed, but, owing to the continued drought, it was not possible to grow second crops.

## (b) LANSOME FIELD.

After the barley crop of 1920, green crops were taken, tares being drilled on one plot, April 26, 1921, and mustard on the other plot on May 31.

The crops were but small, and were ploughed in on July 23.

## THE RELATIVE VALUES OF LIME AND CHALK FOR LIMING PURPOSES (STACKYARD FIELD), 1921. Series B.

The swedes of 1920 were fed off by sheep from December 28, 1920, to the first week of March, 1921, the sheep receiving ½ lb. cotton cake per head daily. The land was ploughed March, 17-30, and again April 15. On April 22 "Chevalier" barley, at the rate of 10 pecks to the acre, was drilled. The barley, like that on the continuous barley plots, suffered considerably from the drought, and the crop was but a moderate one.

It was cut on August 19, carted August 23, and threshed on September 23.

The produce is given in Table IV:

TABLE IV.—*Lime and Chalk Compared (STACKYARD FIELD), 1921. Series B.*

Produce of Barley per acre, after Swedes fed off.

Plot	Applications per Acre	Head corn	Tall corn	Straw, chaff, etc.		
				Bushels per bushel	Weight	C. qr. lb.
1	Nothing	14.8	48.5	8.5	11 2 17	
2	Chalk = 10 cwt. lime	13.8	48.5	8.5	10 1 25	
3	" = 1 ton	11.6	49.5	4.5	10 3 26	
4	" = 2 tons	14.0	50.1	3	9 2 23	
5	" = 3 tons	15.1	50.6	4.5	10 1 10	
6	" = 4 tons	14.2	49.1	3	8 1 9	
7	Nothing	13.1	49.8	3	9 0 15	
8	Lime (caustic) 10 cwt.	16.1	49.4	3	11 3 1	
9	" " 1 ton	15.5	50.5	3	12 1 12	
10	" " 2 tons	14.3	50.6	3	10 1 22	
11	" " 3 tons	13.4	50.5	3	9 0 24	
12	" " 4 tons	15.6	50.3	4.5	11 3 2	

There is nothing very outstanding in the results, nor are the control plots as alike as one would wish. But the general conclusion is borne out that the lime plots have, as a whole, done better than the chalk plots supplying the same amount of lime, for, whereas in the chalk series the produce of one plot only is in excess of the unlimed plot, in the case of the lime series all of them exceed the unlimed produce.

The barleys were reported as being good grinding barleys, and worth about 40s. a quarter, but none were good enough for malting. They were free from smut.

#### GRASS EXPERIMENTS.

##### 1. *Broad Mead, 1921.*

- (a) Improvement of Old Pasture.
- (b) Varieties of Lime.
- (c) Different Forms of Lime.

The pastures were chain-harrowed and rolled March 3-7, and again March 17-23. Once more, owing to absence of stock on the farm, the field had to be mown.

The grass was mown June 24-27, the hay made and carted in good condition June 27-29.

(a) In the Old Pasture series there had been further application, early in 1920, of the different treatments. The 1921 results are given in Table V, page 285.

In such a year it was not to be expected that manures would show much effect, but these results, so far as they went, were much as in 1920, the farmyard manure giving the highest yield, the next best being the two plots on which basic slag, the one with kainit, the other with sulphate of potash, had been used.

(b) The last applications were given in 1916. The results for 1921 are set out in Table VI, page 285.

The unusual results of 1920—when the unlimed plots gave as good a hay crop as any other—were not repeated, though, with one exception, the increases were but small. The one exception was Buxton lime, which gave an increase of 5 cwt. per acre of hay over the unlimed plot. Between the others there was nothing to choose.

(c) Here the last applications had been made in January, 1920. The results of the hay crop of 1921 are given in Table VII, page 285.

As in 1919 and 1920, the highest returns were from ground chalk and ground limestone, though the increases this year were but small. All other plots were much alike.

TABLE V.—*Improvement of Old Pasture (Broad Mead).*  
Produce of Hay per acre, 1921.

Plot	Manuring per acre in 1920	Weight of hay per acre
1	Basic slag 10 cwt.	T. c. q. lb.
	Kainit 3 cwt.	1 6 3 0
2	Mineral superphosphate 5 cwt.	
	Sulphate of potash 1 cwt.	1 1 1 0
3	Basic slag 10 cwt.	
	Sulphate of potash 1 cwt.	1 5 2 0
4	No manure	
	(Lime followed (1913 and 1920) by	1 1 3 0
5	Superphosphate 3 cwt.	0 18 3 0
	Sulphate of potash 1 cwt.	
6	Dung 12 tons	1 12 1 20

TABLE VI.—*Varieties of Lime on Grass Land (Broad Mead).*  
Produce of Hay per acre, 1921.

Plot	Lime applied in 1910 and again in 1916 <sup>1</sup>	Weight of hay per acre
1	Buxton lime	T. c. q. lb.
2	Chalk lime	1 3 1 0
3	Magnesian lime	0 18 3 0
4	No lime	0 19 0 0
5	Lias lime	0 18 2 0
6	Oolite lime	0 18 1 0
		0 19 3 0

<sup>1</sup> Two tons per acre in each case.TABLE VII.—*Different Forms of Lime on Grass Land (Broad Mead).*

Weights of Hay per acre, in 1921.

Plot	Lime applied 1913 and again in 1920 <sup>1</sup>	Weight of hay per acre
1	Lump lime	T. c. q. lb.
2	Ground lime	1 3 3 0
3	Nothing	1 3 0 0
4	Ground limestone	1 3 2 0
5	Ground chalk	1 4 3 0
		1 5 1 0

<sup>1</sup> 20s. per acre (independently of carriage, cartage, &c.), was originally spent on each plot for the lime used.

2. *Charity Farm—Westbrook Field, 1921.*

Plots 1 and 2 were to be hayed in 1921, Plot 3, as always, being kept for feeding.

The plots were chain-harrowed on February 11–14, 1921. The grass was cut June 30–July 5, and carted in good condition July 5–7.

The weights of the hay were:—

		Weight of Hay per acre, 1921.			
		T.	c.	qr.	lb.
Plot 1 (always hayed)	..	0	13	2	0
Plot 2 (alternate grazing and haying)	..	0	14	1	0

The differences are hardly material.

RAINFALL AT WOBURN EXPERIMENTAL STATION, 1920–21.  
(292 ft. above sea level.)

	Total Inches	No. of days with >1 in. recorded	March . . .		No. of days with >1 in. recorded
			Total Inches	March . . .	
1920.					
October . .	1.06	17		1.04	18
November . .	1.41	15		1.22	11
December . .	1.79	24		1.44	16
1921.					
January . .	1.88	18		.49	8
February . .	.50	7		.43	8
				1.66	18
				1.58	11
			Total . .	14.50	171

## POT-CULTURE EXPERIMENTS, 1921.

It is not unfrequently said that the great advantage of Pot-culture work is that one is independent of the weather; that water can be supplied when natural rainfall does not come; that plants can be brought in under cover during inclement weather, storms, etc. But this is only true *within limits*, and the experience of 1921 shows that, though, in a measure protected from untoward outside influences, plants grown in pots are by no means independent of, nor uninfluenced by, natural rainfall, sunshine, etc.

This was shown in the uneven ripening of the different crops, and in the differences between duplicates, rendering the quantitative results less reliable than usual.

It is true that in time of excessive drought such as was experienced in 1921, water can be supplied to the plants, but experience has told us at Woburn that, even in pot-culture work, a natural fall of rain is far more beneficial than the mechanical addition of water to a soil.

I. *The Hills' Experiments.—(a) Chromate and Bi-Chromate of Potash on a second Corn Crop.*

In 1920, experiments were begun with chromium (*Journal R.A.S.E.*, 1920, pp. 269-270), barley being the crop used.

Chromate and bi-chromate of potash were employed in quantity to give, in the first instance, .05 and .10 per cent. of chromium in the soil.

Used in these quantities, the seed was entirely killed. The experiment was then restarted with smaller amounts, viz., .025, .01 and .005 per cent. of chromium.

Only a few feeble plants were produced, and no ears formed at all. This preliminary work showed that .005 per cent. of chromium was toxic and prevented growth.

While a new set of experiments was being started, it was thought well to see also what would be the result of carrying on the earlier experiment for a second year without further additions.

Wheat was accordingly sown, on December 16, 1920, in the several pots. The highest quantity (.025 per cent. Cr.) whether as chromate or as bi-chromate of potash, retarded germination at the outset, but, by the 16th day, practically all the plants had appeared.

A vigorous growth followed in the case of the smaller dressings, but with the highest amount (.025 per cent.) the plants were visibly reduced. The effect was more marked with the bi-chromate than with the chromate. About April, the smaller application (.005 per cent.) showed the most vigorous growth, but, shortly after this, the higher dressing (.01 per cent.) began to take the lead, while the highest application (.025 per cent.) still showed marked toxic effects.

These appearances continued much the same throughout—.025 per cent., whether as chromate or bi-chromate, practically killed the plants, while .005 improved them, this improvement being, however, not equal to that of .01 per cent. These appearances are brought out in Plate I. The results at harvest are given in Table I.

TABLE I.—*Chromate and Bi-Chromate of Potash (2nd year) on Wheat, 1921, after Barley, 1920.*

Applications to Barley 1920				Corn	Straw
				grammes	grammes
Chromate of potash containing .025 per cent. Cr.	.025			—	1.05
" "	.01	"	"	21.97	60.93
" "	.005	"	"	22.24	40.00
Bi-chromate of potash	.025	"	"	—	—
" "	.01	"	"	20.74	54.00
" "	.005	"	"	19.69	39.32

From these results it would appear :—

1. That chromium, whether as chromate or bi-chromate of potash, has a very toxic influence the first year, even when used in quantity containing as little as .005 per cent. Cr.
2. That, if this be continued for a second year, and another crop be grown, the result is one of a stimulating rather than of a toxic nature, this extending to the use of .01 per cent. Cr.
3. That, with as much as .025 per cent. Cr., the toxic effect continues very marked for a second year.
4. That the toxic action is rather more marked with the bi-chromate than with the chromate of potash.

*(b) The action of Chromium Compounds on Wheat.*

Simultaneously with the foregoing a new set of experiments was devised in which chromium in lesser quantities than were found in 1920 to be toxic, was used. The crop was winter-sown Wheat. The compounds used were chromate of potash, bi-chromate of potash, chromium chloride, chromium sulphate and chromic acid, each in four different concentrations, and containing respectively .005, .0025, .001 and .0005 per cent. Cr.

The applications were severally mixed with the whole of the soil in a pot, this soil coming from Stackyard Field.

The pots were earthenware, and in duplicate. Wheat was sown on December 16, 1920.

The germination presented no particular feature except in the case of the chromic acid series, in which it was slower, and not so many plants developed.

Very early in the year the chromate and bi-chromate in the highest amount (.005 per cent.) retarded growth, this influence being less marked as the concentration was diminished.

With chromic acid a number of the plants died off, and those remaining were all weakened, more or less, at first.

With the chloride and sulphate there was no advantage to be seen, and, in some cases, especially with the chloride, there was, seemingly, some deterioration.

In March the chromic acid plants were all still poor, but the others had improved. By the end of April the chromic acid plants, though still weak, had improved somewhat. In June, however, came a great change, for the chromic acid plants, which, until then, had been backward, now made great advance and shot ahead of all the others. This improvement continued until the crops were ready for harvest.

Table II gives the comparative results, and the appearances of the chromic acid plants are shown in Plate 2.

TABLE II.—*Compounds of Chromium on Wheat, 1921.*

Treatment	Treatment			Corn	Straw
Chromate of potash containing	.005	Cr.	.	100	100
" "	.0025	"	.	72.5	66
" "	.001	"	.	167.5	157.5
" "	.0005	"	.	250.1	179.2
Bi-chromate of potash	.005	"	.	133.1	122.5
" "	.0025	"	.	54.3	53.2
" "	.001	"	.	175.0	156.2
" "	.0005	"	.	184.0	136.2
Chromium chloride	.005	"	.	235.7	172.6
" "	.0025	"	.	62.8	101.3
" "	.001	"	.	69.5	112.0
" "	.0005	"	.	82.2	117.2
Chromium sulphate	.005	"	.	103.6	104.5
" "	.0025	"	.	114.0	123.2
" "	.001	"	.	93.6	110.1
Chromic acid	.005	"	.	107.1	117.6
" "	.0025	"	.	163.5	145.8
" "	.001	"	.	288.5	247.0
" "	.0005	"	.	307.0	210.0

Considerations from these results lead to the following conclusions:—

1. That .005 Cr. in the form of chromate or bi-chromate of potash is (as shown in 1920) toxic, the bi-chromate being more so than the chromate. .005 per cent. of chromium may, thus, be fairly fixed as a limit.
2. That, in quantities less than .005 per cent. Cr., chromium, either as chromate or bi-chromate of potash, has a stimulating influence.
3. That chromium chloride is, on the whole, harmful; the sulphate neutral in effect.
4. That chromic acid, while at first seemingly harmful, becomes ultimately extremely stimulating. It would appear, however, not to be safe to use it in concentration of .005 or over.

## II. *The Relative Effects of Lime and Chalk.*

This was the continuation of the experiments begun in 1919 simultaneously with the Field Experiments in Stackyard Field, Series B.

The same pots—and without further additions—were used, and wheat (the 3rd corn crop) was again sown on December 15, 1920.

Lime, wherever applied, showed a benefit, and, though the

differences between small and large applications were not very marked at first, yet, as the season progressed, the improvement as the amount of lime was increased was clearly seen. The lime series, moreover, was, throughout, superior to the corresponding one where chalk in place of lime had been used.

The comparative results are given in Table III, the figures for 1919 and 1920 being repeated for convenience of reference.

TABLE III.—*Lime and Chalk upon Wheat, 1921 (3rd year).*

Treatment	1919		1920		1921	
	Barley		Wheat		Wheat	
	Corn	Straw	Corn	Straw	Corn	Straw
No Lime . . . . .	100	100	100	100	100	100
Lime(CaO) 10 cwt. per acre .	120.6	116.7	117.5	107.1	128	108
"    " 1 ton " " .	144.3	165.0	124.3	112.7	161	138
"    " 2 tons " " .	233.0	245.3	131.2	112.7	195	150
"    " 3 " " " .	292.8	292.1	149.9	132.6	217	151
"    " 4 " " " .	299.0	313.8	148.7	125.8	264	176
No Lime . . . . .	100	100	100	100	100	100
Chalk=CaO 10 cwt. per acre	98.5	102.9	107.5	96.7	106	99
"    " 1 ton " " .	113.3	109.6	127.1	111.7	130	101
"    " 2 tons " " .	113.3	113.9	116.1	105.5	148	123
"    " 3 " " " .	124.1	113.9	106.6	107.5	153	145
"    " 4 " " " .	106.7	111.0	119.1	92.5	153	124

These figures show, as in the preceding years, a gradual increase as more lime is added, and up to 4 tons per acre. With chalk there is also an increase, but one smaller and more gradual than with lime.

It was thought in 1920 that the caustic lime had done most of its work in the first season, but it would appear that this is not the case, for the 1921 crops again show increases not much inferior to those of 1919.

This would lead to the conclusion that caustic lime, when applied to a soil requiring lime, is not, as is generally supposed, at once converted into carbonate of lime, and becomes no more effective than chalk; otherwise, in this, the third year of the experiment, one would expect to get no better results from lime than from the same amount used as chalk.

The results of 1921 point to something very different.

Additional light is thrown on this interesting question by the experiments with silicate of lime recorded in *Journal R.A.S.E.* 1920, p. 275, where marked benefit resulted from the use of this material.

It would seem probable, therefore, that the caustic lime

retains its action as such, or becomes converted into silicate of lime, or some other form in which it can continue to exert its influence.

As the result of this work, I am more than ever convinced that, in considering the lime requirements of a soil, the amount of lime present in the form of carbonate of lime is not the determining factor, but rather the total lime present; and to this I attribute also the anomalous results met with in applying the—  
at present recognised—methods for estimation of the lime requirement of different soils.

### III. *The Influence of Silicates on Wheat.*

(2nd Year), 1921.

The 1920 experiments (*Journal R.A.S.E.*, 1920, pp. 274-5) having shown benefit to follow from the use of calcium silicate, the work was continued for a second year. No change was made, or further applications given, but wheat was resown on November 30, 1920. The plants came up well and grew well.

The first indication of any change was given about April, 1921, with the calcium silicate, when a progressive increase was noticeable as the amount was increased. Magnesium silicate showed also a slight gain but not so marked, while the kaolin plants were no better than the controls. This continued so until harvest, when the comparative results recorded in Table IV were given, those of 1920 being repeated for convenience.

Plate 3 illustrates the appearance of the calcium silicate plants.

TABLE IV.—*Silicates upon Wheat, 1921 (2nd year).*

Treatment	1920		1921	
	Corn	Straw	Corn	Straw
Untreated	100	100	100	100
Calcium silicate, 1 ton per acre	113.4	104.1	146	126
"    "    2 tons "	124.4	116.8	187	136
"    "    4 " "	150.1	139.0	226	159
Magnesium silicate, 1 ton per acre	111.9	115.1	96	115
"    "    2 tons "	109.5	124.5	149	135
"    "    4 " "	113.5	135.4	172	139
Kaolin, 1 ton per acre	83.8	104.3	68.5	83
"    "    2 tons "	96.5	100.3	?	77.5
"    "    4 " "	103.0	96.8	108	98.5

It will be seen that the improvement produced in 1920 by

calcium silicate and magnesium silicate was more than maintained in 1921, while kaolin remained, as then, inactive.

It can scarcely be doubted, from these results, that calcium silicate is a far from inactive form of lime, and additional weight is thereby given to the conclusions come to in the last section (II. Relative effects of lime and chalk). Further, it would appear that magnesium silicate is not without influence in a second year, though this is not so marked as with calcium silicate. Kaolin, however, is without effect.

#### IV. *The Influence of Fluorides on Wheat, 1921.*

This was a new set of experiments designed to see if fluorine in some of its common forms exercises any influence, toxic or otherwise, on wheat.

The selected materials were calcium fluoride at the rate of 5 cwt. per acre; potassium fluoride and sodium fluoride each in amounts supplying respectively .1 and .05 per cent. fluorine to the soil; calcium silico-fluoride 5 cwt. per acre, this latter being a by-product obtained in the manufacture of mineral superphosphate.

The materials were mixed with the whole of the soil in a pot, and wheat was sown November 30, 1920.

The striking feature as regards germination was that all sets proceeded regularly except the sodium fluoride one. By January 8, 1921 only 5 seeds out of 20 sown had germinated with the higher (.1 per cent.) application, and 11 with the lower (.05 per cent.). The former gradually died out, while the latter began to pick up. Simultaneously, a marked improvement was shown with the potassium fluoride plants, which soon grew to be the most luxuriant of all. What was even more noticeable was the mechanical change produced in the soil to which sodium fluoride had been applied. It became quite caked on the surface, and this had to be constantly broken up, while nothing of the kind showed itself with potassium fluoride.

By April all plants with the higher dressing of sodium fluoride were killed off, but with the lower amount (.05 per cent. Fl.) a recovery took place, and then a vigorous growth equalling that of the potassium fluoride.

Calcium fluoride and calcium-silico-fluoride seemed much like the controls.

Plate 4 shows the appearance of the crop, and the comparative harvest results are given in Table V.

The remarkable feature in this experiment is the enormous difference between two compounds so nearly alike as potassium fluoride and sodium fluoride, both as regards the influence on the crops and on the soil.

TABLE V.—*Fluorides on Wheat, 1921.*

Treatment	Corn	Straw
Untreated	100	100
Calcium fluoride 5 cwt. per acre	43	94
Potassium fluoride containing .1 per cent. Fl.	453	266
" " .05	340	202
Sodium fluoride " .1	—	—
" " .05	460	278
Calcium-silico-fluoride 5 cwt. per acre	191	141

While potassium fluoride at .1 per cent. Fl. concentration produced a four-fold crop, sodium fluoride absolutely killed all plants; likewise, the sodium fluoride entirely transformed the aggregation of the soil particles and made the surface look like a clay soil instead of a very sandy one. It is true that sodium fluoride in smaller quantity eventually produced a very heavy increase of crop—indeed, the heaviest of all—but this was only after the early destruction of some of the plants, and the soil change was the same as with the heavier dressing, though not so marked.

Calcium fluoride effected no benefit, but there was a fair increase from the use of calcium-silico-fluoride; the greater solubility of the latter as compared with calcium fluoride is probably answerable for this.

#### V. *The Relative Effects of Chemically prepared and Natural Forms of Magnesium Carbonate.*

The experiments of 1920, recorded in *Journal R.A.S.E.*, 1920, pp. 276-7, were continued for a second year, wheat being the crop of 1921. It is unnecessary to deal *in extenso* with this experiment, inasmuch as no benefit was derived from the several treatments, or difference brought out between the chemically prepared magnesium carbonate and the natural mineral magnesite. Nor did dolomite produce any benefit.

The only point worth putting on record is that, while the prepared carbonate and the magnesite could be used safely up to 4 tons per acre, as soon as this was increased to 6 tons per acre the crop was practically destroyed. Dolomite, however, could be used up to 6 tons per acre without harm, the lime present in it, no doubt, counteracting the harm done by excess of magnesia, a fact already established by many of the past experiments at Woburn.

VI. *The Effect of Ferrous Oxide on Wheat.*

The experiments of 1920 (*Journal R.A.S.E.*, 1920, pp. 272-4) were repeated in 1921 with wheat, in the hopes of explaining some of the anomalies then recorded. But the further experiments have, to some extent, repeated these anomalies, without providing any explanation of them, and it will be necessary to attack the problem in a different way.

All that can now be said is that ferrous oxide giving 2 per cent. Fe on the whole soil has proved to be quite destructive of the crop, while at half the strength (1 per cent. Fe) it reduced the crop to about one-half the normal. In each case lime proved a remedy, but the giving of a full equivalent of lime did not produce the full result, and the double equivalent was needed. This, however, was not as beneficial as the same amount of lime used alone, so that it may be concluded that no benefit, but the reverse, accrues from the presence of ferrous oxide or its salts in the soil.

VII. *Experiments on Leucit as a Source of Potash, 1921.*

As far back as 1911 and 1912 I began experiments at Woburn on certain refractory minerals containing potash, mainly as silicates, with a view of seeing whether the potash contained in them could be utilised by the plant.

The first results obtained led, however, to no definite conclusion; but in 1915, consequent on the shortage of potash salts occasioned by the War, the subject was resumed, and experiments with phonolite and felspar were carried out upon a wheat crop (*Journal R.A.S.E.*, 1915, pp. 362-3).

These were also conducted in 1916 (*Journal R.A.S.E.*, 1916, p. 257) on red clover.

In neither case, however, was any benefit shown.

On continuing the work for another year, however, and growing a second crop of red clover on the same soil to which felspar had been applied a year before, an increase of yield, amounting to from 26 to 36 per cent. on the dry matter, was obtained, so that, though no benefit resulted in the year of application, the potash in the felspar appeared to come into action in the second year. These results are given in *Journal R.A.S.E.* 1917, pp. 235-7.

Again in 1920, though not pursuing the question of potash, I carried out, at Woburn, experiments on silicates. These showed that, though magnesium and aluminium silicates were apparently without effect in the first year, on a wheat crop, yet calcium silicate produced a decidedly beneficial influence (*Journal R.A.S.E.*, 1920, pp. 274-5).

On having brought to my notice another possible source of potash supply in Leucit, I undertook to carry out experiments with it in pursuance of the inquiry already set on foot.

Leucit is, chemically speaking, a potassium aluminium silicate. Enormous deposits of it are found in lava districts in Italy, in the neighbourhood of Rome, Vesuvius, etc., and the project has been advanced to utilise this as a source from which potash salts might be obtained.

The present experiments, however, concerned the use of the raw material itself, without other preparation than that of grinding it very finely. The fineness of the material used was such that 86.8 per cent. of it passed through a sieve having 10,000 holes to the square inch.

The peculiarity of leucit, as compared with felspar and other natural silicates of potash, is that the potash would not appear to be present only in an insoluble form, (and so unlikely to become available for use until after a long time), but to be also in a more or less available form. Thus, the material I experimented with gave no less than 15.93 per cent. of potash ( $K_2O$ ) on treatment with hydrochloric acid, and, even by acting on it with a 2 per cent. solution of citric acid, 1.80 per cent. of potash was found to be dissolved out.

The analysis of the mineral, as treated with hydrochloric acid, was :—

Lime	:	:	:	:	:	:	5.91
Magnesia	:	:	:	:	:	:	.40
Potash	:	:	:	:	:	:	15.93
Alumina and Oxide of Iron	:	:	:	:	:	:	22.87
Silica	:	:	:	:	:	:	52.65
Carbonic acid etc.	:	:	:	:	:	:	2.24
							100.00

I took, for the purpose of the experiment, two very different soils, the one a sandy loam from the Experimental (Stackyard) Field at Woburn, the other a chalky soil from the neighbourhood of Winchester. The latter was selected as being a soil on which practical experience had told that potash in some form or other was eminently required.

Analyses of these soils gave, on the dried soils :—

	Woburn Soil Per cent.	Winchester Soil Per cent.
Lime	.23	37.18
Potash (Total)	.22	.30
Available Potash (soluble in citric acid)	.0135	.0178

The crops on which the leucit was to be tried were (a) wheat, (b) lucerne, (c) grass, (d) potatoes. The first three sets were

to be pot-culture experiments, with each of the two kinds of soil; and there were also field trials arranged for, (d) on potatoes, (e) on grass land.

The very exceptional season of 1921 with its prolonged drought resulted in the complete burning up of the pasture (e), and also caused the potato crop (d) to be a very irregular and poor one, so that the results in these two cases are not worth recording. The application of leucit was, however, put upon a plot in a grass field (Broad Mead) alongside one treated with sulphate of potash and one untreated, and these plots will be kept under observation for another year.

With the pot-culture experiments, on the other hand, it was possible to control the unusual weather conditions to some extent by watering. Those with wheat are here recorded.

Winter wheat was sown in the Woburn soil, but, owing to difficulties in procuring the Winchester soil and its consequent late arrival, it was only possible to grow spring-sown wheat in it. This never threwe well, and, the crop not being at all satisfactory (as has often been found the case with spring-wheat in pot-experiments), the results are not recorded.

It was decided to arrange the experiment by a comparison of leucit and sulphate of potash on the basis of the potash which they respectively contained, these materials being used in quantities supplying, in each case, the same amount of potash.

Thus, the leucit contained 16.2 per cent. potash, 3.84 grammes of it being used per pot.

The sulphate of potash contained 48.79 per cent. potash, 1.28 grammes of it being used per pot.

#### *Wheat Experiments (Woburn soil).*

The above materials were mixed with the whole of the soil contained (40 lb.) in a pot (earthenware), and in the quantities stated. Wheat ("Little Joss") was sown on December 20th, 1920—and, previous to sowing, each pot had a dressing of superphosphate, at the rate of 5 cwt. per acre, mixed with the top 3 inches of soil. There were duplicate pots for each application, the plan of experiment being:—

1. Two pots untreated (control).
2. Two pots leucit—5 cwt. per acre.
3. Two pots sulphate of potash, containing the same amount of potash as 5 cwt. per acre leucit.

There was no particular point to be noted as regards the germination; it was quite good and regular in each. A certain unevenness showed itself after the early frosts, but, by the end of April, 1921, all the pots looked much alike. On May 17 each received a top-dressing of sulphate of ammonia at the rate of 1 cwt. per acre.

About the end of June the leucit set seemed, if anything, to be ahead of the others, though there was little to choose between the different pots.

The growing crops were photographed on July 29 and, shortly after this, they were cut and harvested, being subsequently weighed. The results are given in Table VI.

TABLE VI.

Treatment	Weight of Corn	Weight of Straw	Percentage of Untreated	
			Corn	Straw
1. Untreated	8.19	16.70	100	100
2. Leucit—5 cwt. per acre	11.23	19.99	137	119
3. Sulphate of potash—containing potash—5 cwt. per acre leucit	11.00	18.55	134	111

The duplicate pots agreed very well on the whole. In one or two cases some ears were "smutted," but this did not occur generally.

The results show that there was, in each case, a gain from the use of potash in one form or the other, alike in corn and in straw, but that, as between leucit and sulphate of potash supplying the same amount of potash as the leucit, there was nothing to choose.

These results were quite in accord with the appearances of the crops while growing, the leucit being never behind the others, and, if anything, slightly the better throughout.

It would, therefore, appear that, with a wheat crop, potash as contained in leucit is practically as useful—even in the first year of application—as that supplied in the form of sulphate of potash.

It is intended to carry on this work for a second year, giving no further additions of either leucit or sulphate of potash.

Winter-sown wheat will also be used with the Winchester soil, and there is little doubt but that it will succeed where the spring-sown wheat failed in 1921.

J. AUGUSTUS VOELCKER.

1, Tudor Street, E.C.

## AGRICULTURAL RESEARCH AND EXPERIMENT

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On March 8, 1922, the Council adopted a scheme for the future scientific work of the Society and allocated £2,000 to start a Research fund.

A Research Committee was set up to administer this fund, and to initiate and superintend experiments. The members of this Committee are —

THE DUKE OF DEVONSHIRE, LORD BLEDISLOE, MR. HENRY OVERMAN, MR. JOHN EVENS, PROFESSOR SOMERVILLE, MR. DAMPIER WHETHAM, and a representative of the CHEMICAL, BOTANICAL, DAIRY, and VETERINARY COMMITTEES.

In the first place the Committee are considering the republication in convenient form of the past scientific work of the Society.

Secondly, the investigation of the following problems suggested to the Committee as suitable for experiment will be undertaken:

- (a) The profitable utilization of whey.
- (b) Varieties and cultivation of cereals.
- (c) The use of various forms of lime on grass and tillage crops.
- (d) The value of ground mineral phosphates, more particularly in the improvement of pasture.
- (e) The use of wild white clover, wild red clover, birds' foot trefoil, etc., in laying land down to grass and improving existing meadows and pastures.

The Committee are engaged in considering how best (1) to carry out work on these problems, and (2) to discover what other questions can usefully be examined at the present time or in the immediate future.

The Council also agreed that Members of the Society should be invited to propose subjects for experimental inquiry, and to make offers of assistance, either personal or in the provision of land premises or stock for experiment.

**You are asked to help in this work,**

and if you can

- (1) Suggest a problem of practical importance for experiment;
- (2) Carry out an experiment of practical utility yourself;
- (3) Lend land buildings or stock for the Society to use in agricultural research,

*please write to the SECRETARY, R.A.S.E., 16, BEDFORD SQUARE, LONDON, W.C.1.*

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	HUNTINGDONSHIRE . . . . .	47	1	Major G. R. Lane-Fox; C. Howard Taylor.
	KENT . . . . .	442	2	Col. C. Venables Llewelyn.
	LINCOLNSHIRE . . . . .	438	2	
	OXFORDSHIRE . . . . .	205	1	
	SOMERSET . . . . .	211	1	
	SUSSEX . . . . .	410	2	
FOREIGN COUNTRIES	WORCESTERSHIRE . . . . .	244	1	Sir W. A. Mount.
	WESTMORLAND . . . . .	93	1	J. L. Lindington.
	YORKSHIRE, E.R. . . . .	175	1	Joseph Harris.
	IRELAND . . . . .	113	1	D. T. Alexander.
MEMBERS WITH NO ADDRESSES	NORTH WALES . . . . .	306	2	Lord Bledisloe; H. D. Brocklehurst; John Rowell.
			2	T. L. Aveling; H. F. Plumpton; John Evans; C. W. Tindall.
			21	Robert Hobbs.
GRAND TOTALS		281		Lord Strachan.
		28		Sir Merrick R. Burdett; Lt.-Col. G. L. Courthope.
		28		Capt. R. Oliver-Bellasis.
		68		Lord Henry Bentinck.
		68		T. L. Wickham-Boynton.
				Right Hon. F. Wren.
				Major David Davies; Major E. J. W. Platt.

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS  
IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members		Total
		Life	Annual	Life	Annual	
1839	3rd Earl Spencer	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	140	2,434	2,580
1841	Mr. Philip Pusey	91	219	231	4,047	4,595
1842	Mr. Henry Handley	101	211	325	5,194	5,849
1843	4th Earl of Warwick	93	209	423	6,155	6,902
1844	3rd Earl Spencer	85	214	442	6,041	6,877
1845	2nd Duke of Richmond	94	198	537	5,899	6,733
1846	1st Viscount Portman	92	201	554	6,105	6,971
1847	6th Earl of Egmont	91	195	607	5,478	6,301
1848	2nd Earl of Yorkborough	93	186	648	5,387	6,335
1849	3rd Earl of Chichester	89	178	682	4,643	5,512
1850	4th Marquess of Downshire	90	174	684	4,355	5,261
1851	4th Duke of Richmond	91	162	714	4,044	5,121
1852	2nd Earl of Duley	93	156	711	4,002	4,981
1853	2nd Lord Ashburton	90	147	730	3,928	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	5,177
1855	Mr. William Miles, M.P.	89	141	795	3,838	4,882
1856	1st Viscount Portman	85	139	830	3,899	4,979
1857	1st Viscount Portman	81	137	837	3,740	5,003
1858	2nd Lord Brougham	81	133	904	4,010	5,140
1859	7th Duke of Marlborough	79	130	927	4,008	5,161
1860	5th Lord Walsingham	72	119	927	4,047	5,183
1861	3rd Earl of Powis	84	98	1,113	3,328	4,633
1862	H.R.H. The Prince Consort (1st Viscount Portman)	83	97	1,151	3,475	4,823
1863	Viscount Portman	89	88	1,290	3,705	5,193
1864	2nd Lord Fetherstonha	78	45	1,518	4,013	5,496
1865	Sir E. C. Kerrison, Bart., M.P.	79	81	1,586	4,100	5,752
1866	1st Lord Tredegar	79	84	1,595	4,049	5,622
1867	Mr. H. S. Thompson	77	82	1,588	3,903	5,465
1868	6th Duke of Richmond	75	74	1,409	3,888	5,345
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,864	5,346
1870	2nd Duke of Devonshire	74	71	1,414	3,844	5,369
1871	1st Lord Verdon	72	74	1,580	3,898	5,643
1872	St. W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	5,768
1873	Earl Cathcart	74	62	1,892	3,938	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	5,846
1875	Viscount Bridport	79	79	2,058	3,918	6,145
1876	2nd Lord Chesham	82	78	2,164	4,013	6,149
1877	1st Lord Kimberley	81	78	2,140	3,973	6,149
1878	Col. Kinniside, C.B., M.P.	81	72	2,328	4,130	6,057
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,458	4,700	7,332
1880	9th Duke of Bedford	88	70	2,673	5,083	7,929
1881	Mr. William Wells	85	69	2,765	5,041	7,979
1882	Mr. John Dent, Dent	82	71	2,549	5,059	8,089
1883	6th Duke of Richmond and Gordon	78	71	2,570	4,652	7,221
1884	2nd Duke of Grafton	72	72	2,583	4,663	7,776
1885	Mr. S. Lopes, Bart., M.P.	71	69	3,558	5,619	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	9,134
1887	Lord Egerton of Tatton	71	64	3,440	5,837	9,982
1888	St. M. W. Ridley, Bart., M.P.	68	56	3,621	5,225	8,854
1889	Her Majesty QUEEN VICTORIA	73	58	3,567	7,153	15,106
1890	Lord Moreton	122	58	3,546	6,941	17,494
1891	2nd Earl of Warwick	111	59	3,548	6,911	17,498
1892	1st Earl of Fife	111	59	3,784	7,066	20,11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,138	21,11,126
1894	8th Duke of Devonshire, K.G.	113	78	3,798	7,212	22,11,218
1895	St. J. H. Thorold, Bart.	120	80	3,747	7,179	23,11,149
1896	St. W. G. Gilbert, Bart.	126	83	3,695	7,258	23,11,180
1897	H.R.H. The Duke of York, K.G.	120	83	3,705	7,258	23,11,183
1898	6th Duke of Cambridge, K.G.	71	73	3,622	7,022	25,11,004
1899	Earl of Cornbury	110	75	3,656	7,009	23,10,870
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,626	6,832	24,10,666
1901	3rd Earl Cadw	102	70	3,664	6,838	27,10,033
1902	H.R.H. Prince Christian, K.G.	100	68	3,500	5,955	26,9,030
1903	H.R.H. The Prince of Wales, K.G.	99	62	3,439	5,771	27,9,398
1904	10th Earl of Derby, K.G.	96	63	3,375	5,900	30,9,77
1905	St. M. W. Ridley, Bart.	69	74	3,415	5,858	33,9,170
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30,9,600
1907	Earl of Yorkborough	91	174	3,076	6,299	29,9,609
1908	Duke of Devonshire	89	178	3,019	6,442	30,9,758
1909	4th Earl of Jersey, G.C.B., K.G.	91	177	2,951	6,699	31,9,946
1910	Sir Gilbert Greenall, Bart.	86	168	2,878	6,934	34,10,065
1911	St. M. J. Alesbury KING, George V.	85	168	2,905	7,014	30,10,270
1912	Lord Merton	85	170	2,926	7,024	30,10,309
1913	Earl of Northbrook	89	168	2,691	7,474	24,10,443
1914	Earl of Powis	89	178	2,626	7,629	28,10,545
1915	Duke of Portland, K.G.	88	184	2,517	7,813	28,10,130
1916	7th Duke of Richmond and Gordon, K.G.	83	185	2,427	7,526	27,10,248
1917	Mr. Charles Adeane, C.B.	98	210	2,412	8,214	24,10,955
1918	Hon. Cecil Redvers	102	204	2,395	8,294	25,10,972
1919	St. J. B. Bowen-Jones, Bart.	119	236	2,411	8,558	24,11,348
1920	H.R.H. The Prince of Wales, K.G.	123	256	2,402	9,208	25,12,020
1921	Mr. R. M. Greaves	137	275	2,374	10,098	24,12,908

**STATEMENT made to the Council by the Chairman  
of the Finance Committee, on presenting the Accounts  
for the year 1921.**

Mr. ADEANE, in presenting, on behalf of the Finance Committee, the Accounts of the Society for the year 1921, said he thought the Council would agree these were very satisfactory. (Hear, hear.) At the commencement of the year, he said, the Society owed £9,156. Against this there were debtors and cash £3,286, leaving a net liability of £5,870. He was glad to say that the result of the year's finance was that they had cleared off all those liabilities, with the exception of £1,100 income tax, which was not payable until January of this year. There was a credit balance of £4,041. Taking the receipts and payments for 1921, these were presented as a cash statement, and did not include estimates or liabilities as heretofore; this was in accordance with the instructions of the Council in March last. On the side of the receipts, it would be noticed that the Society's income had benefited to the extent of £822 by the increase of membership, and by a rebate of income tax amounting to £1,320. There was also an increase from investments of £985, owing to the non-levy of income tax. On the side of expenditure he would like to draw attention to the cost of the *Journal*. It would be seen that for Vol. 82 the expenditure so far was only £195, whereas for 1920 the corresponding figure was £1,223. This difference was owing to the adoption of the cash system of account, no provision having been made by estimate for the cost of the production of the *Journal*, as in 1920. The bulk of the cost of Vol. 82 of the *Journal* would appear in the current year. The only considerable amount under the head of "Extra Expenditure" was the contribution of £600 to the Live Stock Defence Committee. He thought they would all agree that this was money well spent. With regard to the balance-sheet, the Society's capital now stood at £83,060, as compared with £59,994 in 1920, showing an increase of £23,066, due to the appreciation of their securities and to the profit on the Derby Show. It might interest the Council to know that the receipts and expenditure on the show and ordinary accounts in 1921 amounted to £163,261, as against £80,047 in 1920, showing the great increase in the turnover of the Society. They estimated the income of the Society for the present year at £15,969. This year they proposed to put aside £3,500 against loss on the Show in view of the possibility of the Society having to pay income tax on any Show surplus. The estimated ordinary expenditure was £13,052, leaving a balance of £2,917. It was desirable that the Society should continue to do all it could for science within its means, as it always had done in the past. The difficulty from the financial point of view was that they seemed to be sometimes up and sometimes down, and there was the danger that if in times of prosperity they placed permanent burdens on their finances, they might not in bad times be able to maintain them. This year undoubtedly they could make a substantial contribution to the scientific side, and they suggested that the sum

of £2,000 should be placed to a Research Fund, and that the Council add to the fund from time to time as far as their finances would permit. If this met with the approval of the Council it would be necessary to set up a Research Committee to recommend to the Council in what manner they thought this money should be expended, and also to administer the fund. He understood that proposals to this effect were contained in the Report of the Committee which was set up to consider in what way the scientific side of the Society might be developed. If this was adopted the estimated balance on the ordinary account would be £917.

Mr. ADEANE then presented the following estimate for the present year:—

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1922.

(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of Recommendations of September 21st, 1905, made by the Special Committee.

Actual Figures for 1921.	Receipts.	
£		£
11,310 From Subscriptions for 1922 of Governors and Members . . . . .	11,500	
328 From Interest on Daily Balances . . . . .	200	
3,532 From Interest on Investments . . . . .	3,869	
397 From Sales of Text Books, Pamphlets, &c. . . . .	400	
	(This does not include the sales of Journals, which are deducted from the cost of production.)	
1,821 Income Tax repaid.		
17,388		15,969
	<i>Expenditure.</i>	
£		£
2,771 Salary of Secretary and Official Staff . . . . .	2,899	
382 Pensions to Officials . . . . .	468	
983 Rent, Lighting, Cleaning, Wages, &c. (say) . . . . .	1,000	
1,131 Printing and Stationery . . . . .	1,100	
338 Postage and Telegraphs . . . . .	450	
410 Miscellaneous . . . . .	400	
40 Library—Binding of Books, &c. . . . .	100	
193 Journals . . . . .	1,550	
723 Chemical Department . . . . .	415	
150 Contribution to Woburn Farm . . . . .	—	
242 Contribution to Wilks' Bequest . . . . .	—	
250 Botanical Department . . . . .	250	
200 Zoological Department . . . . .	200	
203 Veterinary Department . . . . .	200	
100 Grant to Research Institute, University College, Reading . . . . .	100	
199 Consulting Engineer . . . . .	100	
177 Examinations for National Diploma (R.A.S.E. Share) . . . . .	220	
2,500 Amount set aside towards loss on Shows . . . . .	3,500	
10,898		12,952
	<i>Exceptional Expenditure.</i>	
285 Scientific Research Fund . . . . .	2,000	
113 Printing Tractor Report . . . . .	—	
600 Contribution to Live Stock Defence Committee . . . . .	—	
100 Grant for Long Services at Woburn . . . . .	—	
652 Excess Expenditure in Production of Journal . . . . .	—	
17 Printing Farm Account Books . . . . .	100	
12,665		15,052
	<i>Estimated Receipts</i> . . . . .	£15,969
Credit Balance—	<i>Estimated Expenditure</i> . . . . .	15,052
4,725	<i>Estimated Receipts over Expenditure</i> . . . . .	£917

## STATEMENT OF RECEIPTS AND EXPENDITURE

JUNE 28

Corresponding figures for 1920. £	Receipts.	£	s. d.	£	s. d.
2,000	Subscription from Town of Derby . . . . .	2,000	0		
2,824	Prizes given by Agricultural and Breed Societies . . . . .	3,434	2	6	
1,390	Prizes given by Derby Local Committee . . . . .	1,318	0	0	
4,214				4,752	2
500	Contribution to Show . . . . .				
	<b>FEES FOR ENTRY OF IMPLEMENTS:—</b>				
10,152	Implement Exhibitors' Payments for Shedding . . . . .	13,778	13	4	
227	Non-Members' Fees for Entry of Implements . . . . .	418	1	0	
156	Fees for Entry of "New Implements" . . . . .	140	0	0	
10,535				14,336	14
	<b>FEES FOR ENTRY OF LIVE STOCK:—</b>				
	By 2 Members' Entries @ 5s. . . . .	10	0	0	
	1,779 Members' Entries @ 3s. . . . .	5,337	0	0	
	1,607 Members' Entries at 30s. . . . .	2,410	10	0	
	281 Members' Entries @ 1s. . . . .	231	0	0	
	62 Members' Entries @ 15s. . . . .	46	10	0	
	6 Members' Entries @ 10s. . . . .	3	0	0	
	65 Members' Entries @ 6s. . . . .	16	5	0	
	6 Substituted Entries @ 5s. . . . .	1	10	0	
	Entrance fees . . . . .	90	4	0	
	102 Non-Members' Entries @ 6s. . . . .	612	0	0	
	9 Non-Members' Entries @ 3s. . . . .	27	0	0	
	5 Non-Members' Entries @ 2s. . . . .	10	0	0	
6,419	53 Entries @ 10s. . . . .	26	10	0	
				8,871	9
	<b>FEES FOR ENTRY OF POULTRY:—</b>				
63	By Members:—490 Entries @ 5s. . . . .	124	15	0	
346	By Non-Members:—717 Entries @ 10s. . . . .	358	10	0	
	Entrance fees . . . . .	5	0	0	
409				488	5
	<b>OTHER ENTRY FEES:—</b>				
121	Produce . . . . .	107	5	0	
148	Rabbits . . . . .	107	12	0	
55	Horse-Jumping Competitions . . . . .	83	0	0	
28	Plantation Competition . . . . .	43	18	0	
350				341	15
	<b>CATALOGUE:—</b>				
	Extra Lines for Particulars of Implement Exhibits . . . . .	11	3	0	
11	Woodcuts of "New Implements" . . . . .	7	5	0	
10	Advertising in Catalogue . . . . .	1,404	12	8	
1,544	Sales of Implement Section of Catalogue . . . . .	59	3	6	
47	Sales of Combined Catalogue . . . . .	2,352	9	9	
1,730	Sales of Jumping Programme . . . . .	68	10	7	
75				3,898	13
					6
3,417	<i>Less Commission on Sales . . . . .</i>	73	14	0	
47				3,624	19
3,370					
£29,797	Carried forward . . . . .	£2,111	8	8	£34,815
					5

TURE OF THE SHOW AT DERBY,  
LY 2, 1921.

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Amounts for 1920.	Expenditure.				£	s.	d.
	£	s.	d.	£	s.	d.	
<b>COST OF ERECTION OF SHOWYARD :—</b>							
2,958				Transferring Society's Permanent Buildings from Darlington to Derby (including taking down and re-erecting)	8,210	10	0
1,141				Fencing round Showyard	1,845	7	8
3,008				Implement Shedding	3,827	7	11
5,737				Stock Shedding	9,281	0	10
657				Poultry and Produce Sheds	718	13	8
358				Rabbit Shed			
513				Dairy	598	13	5
109				Fodder Shed and Office	129	10	0
746				Education and Forestry	312	2	5
802				Grand Stand and Large Ring	930	10	5
1,583				Various Offices and Stands	1,040	4	2
951				Planting Signs and fixing do., Fencing and Judging Rings	963	11	0
62				Insurance	17	9	
134				Ironmongery	92	12	2
5,310				Hire of Canvas	1,926	13	0
7,528				New Timber	51	2	8
5,031				Provision for Renewal of Timber	1,500	0	0
				General Labour and Horse Hire (including Society's Clerk of Works)	2,100	19	0
389				Temporary Entrances to Show	475	10	3
—				Extra Carriages	331	2	3
66				Bee Shed	29	7	8
36,403				Less Rent of 80 Flagpoles @ 10s.	30,015	5	1
40					40	0	0
35,953							
<b>SURVEYOR :—</b>							
598				Salary, 400L.; Assistant Surveyor's Salary, 150L.; Travelling Expenses to London, 57L. 16s.; Clerk, 10L. 10s.; Petty Cash, 12L. 4s. 2d.	630	10	2
<b>PRINTING :—</b>							
1,457				Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, Tickets and Miscellaneous	1,860	10	5
106				Programmes for Members	65	5	10
69				Plans of Showyard	35	0	0
3,093				Printing of Catalogues	2,467	17	11
222				Binding of Catalogues	171	3	9
148				Carriage of Catalogues	53	9	6
35				Printing Awards	78	4	2
26				Programmes of Jumping Competitions	24	10	0
5,045							
					4,256	1	7
<b>ADVERTISING :—</b>							
278				Advertising Closing of Entries in Newspapers	157	11	3
399				Advertising Show in Newspapers	238	3	0
304				Bill Posting	444	12	6
359				Printing of Posters, &c.	270	5	8
75				Press Pamphlet	24	2	6
5				Carriage	7	5	10
1,411							
					1,141	19	8
<b>POSTAGE, CARRIAGE, &amp;c. :—</b>							
188				General Postage	198	13	9
84				Postage of Badges to Members	89	11	8
19				Carriage of Luggage	17	18	11
291							
					306	4	4
10,223				<b>AMOUNT OF PRIZES AWARDED, including 4,752L. 2s. 6d. given by various Societies and Derby Local Committee</b>			
						11,368	8
<b>COST OF FORAGE FOR LIVE STOCK :—</b>							
3,670				Hay, 844L. 14s. 2d.; Straw, 796L. 1s. 5d.; Green Food, 784L. 18s. 7d.; Cartage and Labour, 167L. 2s. 2d.; Rick Covers, 17L. 10s.; Stewards' Exp., 50L.; Petty Cash, 28L. 3s. 10d.	2,689	3	2
<b>JUDGES' FEES AND EXPENSES :—</b>							
939				Judges of Miscellaneous Implements, 29L. 4s. 0d.; Horses, 7L. 6s. 8d.; Cattle, 18L. 10s. 3d.; Sheep, 19L. 6s. 11d.; Pigs, 83L. 4s. 3d.; Goats, 7L. 9s. 8d.; Poultry, 37L. 8s. 7d.; Rabbits, 3L. 6s. 0d.; Produce, 32L. 17s. 2d.; Luncheons, 8L.	740	13	6
114				Badges for Judges and other Officials	59	5	9
95				Rosettes	118	11	10
£99,749				Carried forward			
					551,966	8	8

## STATEMENT OF RECEIPTS AND EXPENDITURE

Corresponding figures for 1920. £	Receipts (contd.).			
		£	s. d.	£
27,797	Brought forward			34,815
MISCELLANEOUS RECEIPTS:—				
791	Admission to Horticultural Show			1,147 2 3
581	Garage			964 1 0
90	Rent for Railway Offices			90 0 0
60	Premium for Cloak Rooms			60 0 0
120	Rent for Ministry of Agriculture Pavilion			120 0 0
178	Advertisements in Stock Prize Sheet			286 15 6
11	Advertisements in Showyard			7 2 0
63	Sale of Band Stand			—
	Sale of Manure			20 0 0
2	Miscellaneous			19 10 6
67	Sale of Timber			16 18 0
—	Bath Chairs			15 0 0
1,963				— 2,745 1
ADMISSIONS TO SHOWYARD:—				
2,837	Tuesday, June 28, @ 10s.			1,867 11 6
7,662	Wednesday, June 29, @ 5s.			8,079 16 0
7,846	Thursday, June 30, @ 5s.			8,888 7 2
3,456	Friday, July 1, @ 3s.			4,704 4 2
2,652	Saturday, July 2, @ 2s.			2,152 14 8
664	Season Tickets			560 4 6
778	Day Tickets			501 0 0
25,895				— 26,253 1
ENTRANCES TO HORSE RING:—				
384	Wednesday, June 29			336 18 0
375	Thursday, June 30			285 12 6
303	Friday, July 1			285 10 0
259	Saturday, July 2			172 8 0
882	Tickets sold for Reserved Enclosure			930 8 11
2,203				— 2,008 1
SALES:—				
347	Sales of Produce at Dairy			239 1
1,082	Auction Sales in Showyard (Share of Commission)			811 1
59,287				
7,766	Debit Balance			
867,053				866,675 11

Examined, audited, and found correct, this 24th day of Nov., 1921,  
 T. B. TURNER, Secretary. JONAS M. WEBB,  
 DEPUTY, PLEASANT, } Accountant. H. J. GREENWOOD, } Auditors on behalf  
 GRIMMITS & Co., } of the Society.  
 NEWELL P. SQUARRY,

		Expenditure (contd.).		£	s.	d.	£	s.	d.			
Brought forward							51,286	8	8			
<b>GENERAL ADMINISTRATION:—</b>												
223	Stewards:—Personal and Railway Expenses			174	0	1						
237	Assistant Stewards:—Personal and Railway Expenses			230	11	0						
251	Official Staff:—Extra Clerks, 23s. 17s. 7d.; Lodgings, 5s. 10s. 8d.; Maintenance of Clerks, 4s. 7s. 1d.; Travelling Expenses, 31s. 1s. 9d.; Secretary's Hotel and Travelling Expenses, 71s. 1s. 1d.			442	1	6						
265	Finance Office:—Finance Clerks, 29s. 16s. 2d.; Grand Stand Men, 83s. 18s. 8d.; Turnstile Men, 91s. 10s.; Refreshments, 9s. 19s. 8d.			215	4	4						
69	Awards Office:—Clerks, 39s. 9s. 7d.; Award Boys, 16s. 10s.			55	19	7						
256							1,117	16	8			
<b>General Management:—</b>												
114	Foreman and Assistant Foremen			159	19	1						
137	Yardmen and Puddermen			181	7	11						
259	Door and Gate Keepers			237	13	7						
29	Garage:—Superintendent and Assistants			89	5	2						
137	Veterinary Department:—Veterinary Inspectors			138	8	10						
116	Engineering Department:—Consulting Engineer and Assistant, 18s. 10s. 6d.; House, Maintenance and Travelling Expenses			143	10	0						
44	Police, &c.:—Metropolitan Police, 1,203s. 4s. 8d.; Commissaries, 19s. 2s. 9d.; Refreshments, 8s. 1s.			1,230	8	5	2,180	13	0			
311												
216	Dairy:—Staff, 260s. 12s. 8d.; Milk, 157s. 5s.; Ice, 21s. 2s. 6d.; Utensils, 112s. 15s. 2d.; Salt, 11s. 10s.; Engine, 30s. 9s. 7d.; Butter Tests, 49s. 17s. 9d.; Carriage, 18s. 19s. 1d.; Loggings, 18s. 19s. 9d.; Butter and Cheese Boxes, 4s. 0s. 6d.; Milk Analysis, 7s. 4s.; Refreshments, 31s. 13s.; Labour, 115s. 2s. 9d.; Fuel, 6s. 6d.; Miscellaneous, 20s. 18s. 6d.; Garter Milk Testier, 23s. 19s. 3d.			893	6	9						
19	Analysis of Cider						8	0	0			
300	Poultry:—Superintendent, 15s. 9s. 1d.; Penning and Feeding, 10s. 13s. 8d.; Labour, 41s. 7s. 4d.; Carriage, 20s. 11s.; Refreshments, 1s. 0s. 6d.			155	1	2						
23	Rabbits:—Superintendent, 21s.; Carriage and Staging, 10s. 14s. 8d.			31	14	8						
358							1,118	2	7			
618	Horticultural Show:—Hire of Tents, 410s. 7s. 4d.; Judges, 24s. 14s. 2d.; Wages, 94s. 0s. 10d.; Medals, 40s. 0s. 6d.; Printing, 17s. 11s. 6d.; Advertising, 10s. 13s.; Carriage and Cartage, 10s. 4s. 3d.						568	18	7			
94	(For Admissions see Miscellaneous Receipts.)									50	4	9
<b>GENERAL SHOWARD EXPENSES:—</b>												
450	Telephone Extension			46	0	0						
257	Telegraph Extension											
72	Official Luncheon			49	0	0						
45	Hire of Chairs											
60	St. John Ambulance			50	0	0						
314	Hire of Furniture											
39	Linen and Towels			44	8	0						
37	Hire of Wetherbridge			15	0	0						
37	Mars and Electrocs of Yard			62	14	2						
22	Engraving Cups			45	5	0						
11	Medals			18	10	0						
43	Gas and Fittings			31	12	4						
—	Flags			22	18	3						
—	Sleepers			73	18	6						
14	Billposting in Showyard			12	15	8						
12	Horse and Carriage Hire			13	10	0						
15	Tan			12	13	1						
114	Education and Forestry			89	10	0						
—	Hire of Tents			10	0	0						
—	Hire of Chairs			7	0	0						
19	Hire of Bath Chairs			31	8	4						
17	Hire of Safes			6	0	0						
106	Carriage and Cartage			10	19	7						
—	Miscellaneous			41	3	1						
667							702	19	6			
910	Accounts relating to Cardiff Show											
—												
—							57,054	13	7			
—							9,821	5	5			
—							£66,875	19	0			
—												
—	Actual profit on the Derby Show						£9,621	5	5			
—	Add—Contribution from the Ordinary Account to Show Fund						2,500	0	0			
—							12,121	5	5			
—	Deduct—Special contribution to Darlington Local Fund for 1920 Show						2,000	0	0			
—							£10,121	5	5			

## ROYAL AGRICULTURAL

Dr.

BALANCE SHEET

Corresponding figures for 1920.		£ s. d.	£ s. d.	£ s. d.
	To SUNDY CREDITORS—			
7,898	Sundry Creditors . . . . .		1,400	4 10
	Subscriptions received in 1921, but belonging to 1922		80	7 0
				1,480
1,258	<i>Overdraft at Bank.</i>			
73,275	To Amount placed on deposit for renewal of Show Timber			1,500
	To CAPITAL—			
	As at December 31, 1920 . . . . .		59,993	10 7
	Add			
	SHOW FUND—			
5,266	Profit on Show at Derby . . . . .	9,621	5	5
58,009	Add Contribution from Ordinary Account . . . . .	2,500	0	0
			12,121	5 5
2,139	<i>Less</i> Special Contribution to Darlington Local			
116	Fund for 1920 Show. . . . .	2,000	0	0
			10,121	5 5
70,264	Loss.			
3,997	Life Compositions received in 1921 . . . . .	1,613	0	0
66,267	Donations towards the Society's Funds . . . . .	74	0	0
	Increase in value of Investments . . . . .	6,710	18	10
	Subscriptions for 1921 received in 1920 . . . . .	176	14	0
	Excess of ordinary receipts over payments for the			
	year 1921 . . . . .	4,722	16	1
	<i>Debit balance.</i>			
	<i>Less</i> Sundry debts unrecoverable . . . . .	83,412	4	11
			27	8 4
			83,384	16 7
	DEPRECIATIONS written off, viz.:—			
6,085	<i>Investments.</i>			
17	Fixtures . . . . .	15	6	4
59	Furniture . . . . .	53	7	11
3	Machinery . . . . .	9	8	1
86	Show Plant . . . . .	77	8	9
23	Buildings at Woburn . . . . .	69	17	6
	Lease of 16, Bedford Square. . . . .	100	0	0
6,273			824	8 7
59,994				83,06
£69,150				£85,0

T. B. TURNER, *Secretary.*  
DROUETTE, PLENDER, GRIFFITHS & CO., *Accountants.*

## SOCIETY OF ENGLAND.

xv

DEMBER 31, 1921.

Cr.

	£ s. d.	£ s. d.
By RESERVE FUND—		
71,942L 13s. 3d. 5 per cent. War Stock (1929-1947) @ 92½* . . . . .	66,387	2 1
500L War Saving Certificates @ cost . . . . .	387	10 0
2,840L 13s. 3d. Metropolitan 3 per cent. Consolidated Stock (1941) @ 83½* . . . . .	1,945	15 5
6,528L 1s. 6d. Canadian 4 per cent. Stock (1940-1960) @ 77* . . . . .	5,026	12 4
* Written up to market value at 31 Dec., 1921.		
By LEASE OF 16, BEDFORD SQUARE . . . . .	1,600	0 0
Less Amount written off . . . . .	100	0 0
	1,500	0 0
By FIXTURES—		
Value at December 31, 1920 . . . . .	204	4 11
Less Depreciation at 7½ per cent. . . . .	15	6 4
	188	18 7
By FURNITURE—		
Value at December 31, 1920 . . . . .	533	19 3
Less Depreciation at 10 per cent. . . . .	53	7 11
	480	11 4
By PICTURES (500L) and BOOKS (1,071L 4s. 10d.) . . . . .	1,571	4 10
By MACHINERY—		
Value at December 31, 1920 . . . . .	94	1 2
Less Depreciation at 10 per cent. . . . .	9	8 1
	84	13 1
By SHOW PLANT—		
Value at December 31, 1920 . . . . .	774	7 7
Less Depreciation at 10 per cent. . . . .	77	8 9
	696	18 10
Added during 1921 . . . . .	632	18 9
By BUILDINGS AT WOBURN . . . . .	68	17 6
Less Depreciation . . . . .	68	17 6
By SUNDRY DEBTORS . . . . .	736	2 2
By CASH AT BANKERS AND IN HAND—		
ORDINARY ACCOUNT—		
Reserve Fund . . . . .	506	0 0
Current Account . . . . .	3,464	14 4
Cash in Hand . . . . .	70	6 8
	4,041	1 0
SHOW ACCOUNT—		
On Deposit . . . . .	1,500	0 0
Current Account . . . . .	881	11 5
	2,381	11 5
	6,422	12 5
	£36,040	19 10

Examined, audited, and found correct, this 23rd day of February, 1922.

JONAS M. WEBB  
H. J. GREENWOOD  
NEWELL F. SQUARAY, )  
Auditors on behalf of the Society.

**STATEMENT OF RECEIPTS**

T. B. TURNER, *Secretary.*  
DELOITTE, PLENDER, GRIFFITHS & CO., *Accountants.*

Payments.						
	£	s.	d.	£	s.	d.
<b>BALANCE DUE TO BANK AT JANUARY 1, 1921:—</b>						
Ordinary Account				1,258	1	11
<i>Add</i> Cheques outstanding				113	1	10
<b>GENERAL ADMINISTRATION:—</b>						
146 Salaries of Official Staff (including clerical assistance)	2,771	5	6			
140 Pensions to Officials	382	1	7			
83 Legal Charges and Auditors' Fees	144	6	0			
099 Rent, Rates, Taxes, Insurance and House Expenses	983	6	7			
21 Purchase of Books	21	18	2			
160 Printing and Stationery	1,132	0	2			
328 Postage and Telegrams	398	0	4			
93 Carriage of Parcels and Travelling Expenses	98	5	4			
149 Advertising and Miscellaneous Office Expenses	150	19	8			
				6,018	0	4
<b>JOURNAL OF THE SOCIETY:—</b>						
533 Balance cost of Volume 81	651	8	8			
243 On Account of Printing Volume 82	195	11	11			
				847	0	7
<i>Printing Text Book</i>						
875 Printing Tractor Report				285	0	11
158 Printing Farm Account Books				13	9	6
62 Printing Pamphlets				3	4	0
<b>LABORATORY:—</b>						
722 Salary and Petty Cash				723	0	7
<b>OTHER SCIENTIFIC DEPARTMENTS:—</b>						
150 Botanist's Salary	250	0	0			
200 Zoologist's Salary	200	0	0			
53 Contribution to Woburn	100	0	0			
400 Grant to Royal Veterinary College	200	0	0			
100 Grant to Research Institute, University College, Reading	100	0	0			
4 Medals for Proficiency in Cattle Pathology	3	1	0			
<b>NATIONAL DIPLOMA IN AGRICULTURE:—</b>				853	1	0
199 Honours and Expenses of Examiners	355	12	4			
118 Travelling Expenses of Officials	138	10	4			
74 Hotel Expenses of Examiners and Officials	110	16	6			
95 Printing, Stationery and Postage	74	18	0			
17 Writing Diplomas	12	13	6			
75 Salary for Assistant	75	0	0			
	767	10	8			
138 <i>Less</i> Entry Fees and Sales of Examination Papers	652	4	7			
	115	6	1			
199 <i>Less</i> Highland and Agricultural Society's Moyley	57	13	1			
				57	13	0
<b>NATIONAL DIPLOMA IN DAIRYING:—</b>						
178 Hire of Premises, &c.	82	7	2			
64 Fees to Examiners	91	2	8			
34 Hotel and Travelling Expenses	42	4	10			
46 Printing and Postage	22	5	6			
	238	0	2			
113 <i>Less</i> Entry Fees and Sales of Examination Papers	118	5	5			
				119	14	9
<b>EXTRA EXPENDITURE:—</b>						
189 <i>Emergency Committee</i>						
Printing Library Catalogue (half)	112	8	4			
139 Hills' Bequest: Contribution for current year	241	19	11			
150 Contribution towards Woburn Farm	150	0	0			
10 Contribution to Live Stock Defence Committee	600	0	0			
206 Grant for long services at Woburn Farm	100	0	0			
<i>Occasional Notes</i>						
50 Library:—Binding and Purchase of Books	39	16	9	1,245	5	0
140 Total of Ordinary Payments						
				10,165	10	5
150 <i>Towards Loss on Show</i>						
<i>Cost of Tractor Trials</i>				6,208	2	10
Payments to Creditors at December 31, 1920						
<b>BALANCES AT BANK AND IN HAND:—</b>						
Reserve Fund	506	0	0			
Current Account	3,464	14	4			
Cash in Hand	70	6	8			
				4,041	1	0
				521,785	18	0

Examined, audited, and found correct, this 23rd day of February, 1922.

JONAS M. WEBB  
H. J. GREENWOOD  
NEWELL P. SQUAREY *Auditors on behalf of the Society.*

# Royal Agricultural Society of England.

## STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1921.

	£ s. d.	£ s. d.
To Hills' Bequest for Pot-culture Experiments	9,000 0 0	By £5,600, 17s. 6d. 5% War Stock (1928-1947) received under the conversion rights for £5,282.17s. 6d. 4 1/2% War Stock (Value on December 31, 1921, at 93 1/2 = 5,129.11s. 3d.)
Less: Depreciation of Consols at time of conversion	3,652 7 1	
" " Cost of conversion	134 14 7	3,717 2 6
	<u>6,282 17 6</u>	<u>5,282 17 6</u>
To Fund provided by the late Sir Walter Gilbey for Endowment of Lectureship at Cambridge when after a certain date any balance on this account will become the property of the Society	1,189 19 10	By £1,140. Metropolitan Water Stock at cost (Value on December 31, 1921, at 94 = 51E. 12s. 0d.)
		By amount accumulated in the Society's Sunday Creditors Account.—
" " Fund unclaimed		: : : 189 19 10
		Accumulated income : : : 191 18 10
	<u>£1,189 19 10</u>	<u>£1,189 19 10</u>
To Superannuation and Insurance Fund:—		By Investments in names of Trustees of Super- annuation and Insurance Funds, viz.:—
Amount set aside in accordance with declaration of Trust of July 26, 1911	£ 9,171 5 0	8,817.7s. 1d. 5% War Stock (1929-1947) at cost (Value on December 31, 1921, at 93 1/2 = 8,134. Os. 6d.)
Less: Depreciation of Consols at time of conversion	1,837 18 4	4432.3s. 1d. West Australian 3 1/2% Stock (1935- 1955) at cost. (Value on December 31, 1921, at 61 = 270. 7s.)
" " Cost of conversion	256 3 0	2332.18s. 6d. Queensland 3 1/2% Stock (1930- 1970) at cost. (Value on December 31, 1921, at 59 = 140. 7s. 6d.)
Add: Purchase of £367.14s. 9d. 5% War Loan at cost	2,094 1 4	7,077 3 8
Income Tax payable on War Stock	: : :	5,244 3 8
Accumulation to December 31, 1921		244 0 1
		791 11 2
	<u>£9,279 14 11</u>	<u>£9,279 14 11</u>

Mr. R. TURNER, Secretary. Examined, audited, and found correct, this 23rd day of February, 1922.  
JONAS M. WEBB, *Actuaries, 1921*

[Copies of the full Report of any of the Council Meetings held during the year 1921 may be obtained on application to the Secretary, at 16, Bedford Square, London, W.C.1.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Minutes of the Council.

WEDNESDAY, FEBRUARY 2, 1921.

MR. R. M. GREAVER (President) in the Chair.

Before proceeding with the ordinary business, the PRESIDENT made sympathetic reference to the loss sustained by the Society since the last meeting, through the death of Sir John Thrusby, who had been one of the representatives of Lancashire on the Council since 1916. This intimation, the PRESIDENT said, would, he was sure, be received with great regret by every member of that Council.

Eleven Governors were elected and 277 duly nominated candidates were admitted into the Society as Members.

The Report of the FINANCE Committee was received and adopted, including a recommendation that Mr. Thomas Blundell Turner be appointed Secretary of the Society. MR. ADEANE, in moving the adoption of this report, said the FINANCE Committee were unanimous in recommending the appointment of Mr. Thomas Blundell Turner as Secretary of the Society. Mr. Turner had had entire management of the Peterborough Summer Show, the Peterborough Spring Stallion Show, and the Mare and Foal Show. He had been highly recommended, and was in every way suitable for the post.

The Report of the JOURNAL AND EDUCATION Committee was presented. In moving that it be received and adopted, Col. CORNWALLIS said it was with very deep regret that the Committee had learned of Sir John Thorold's wish to retire from the Chairmanship of the Committee, which he had held for over a quarter of a century. His very wide and intimate knowledge of agricultural literature, combined with his knowledge of farming and allied industries, as well as his courtesy at all times, made him an ideal Chairman, and the Committee hoped that, in spite of his retirement from active work, they might still have the advantage of his counsel and advice.

Col. CORNWALLIS—continuing—said it was hoped, by adopting the recommendations contained in the Committee's report, to bring the cost of the Journal within the limits laid down by the Finance Committee. To do that, it would be necessary to omit from the Journal the Report on the Trials of Agricultural Tractors. Since the meeting he had heard that the Implement Committee had decided to recommend that that Report should be included in the Journal. It was intended, he believed, to publish the Report in pamphlet form now; so that by the time the Journal appeared the Report would have become, to some extent, stale matter. Moreover, if it were put in the Journal, there would be no room for any original articles.

Col. STANYFORTH, while expressing regret at the decision of the Journal Committee, explained that the Implement Committee attached great importance to the appearance of the Report in the Journal and were unanimous in recommending that it should be included therein. It was, of course, a matter for the Council to decide.

After discussion in which Mr. MIDDLETON, Mr. FALCONER, the Hon. JOHN E. CROSS, Mr. ADEANE, Mr. EVENS, Mr. MATHEWS, Mr. CRUTCHLEY,

Sir GILBERT GREENALL and Mr. HARRISON took part, Col. CORNWALLIS said he thought the general feeling of the Council was in favour of including the Report in the Journal rather than other articles. If that were done, the Volume would be one such as they had never had before. But if that were the wish of the Council, it was the obvious duty of the Journal Committee to carry out that wish.

On the motion of Col. STANYFORTH, seconded by Mr. CROSS, it was resolved :—

“That the Report of the Trials of Agricultural Tractors be printed in the Journal, and that it be published forthwith as a pamphlet at a charge sufficient to cover the cost of printing, including composition, illustrations, etc.”

The Report of the JOURNAL AND EDUCATION Committee was then adopted with the omission of the portion relating to the Tractor Report.

The Report of the VETERINARY Committee was presented. That Committee had considered a letter from the Town Clerk of the City of London, inviting the Society to send representatives to a Conference to be held at the Guildhall to discuss the importation of live store stock from Canada, and, if so determined, to request the Government to remove the existing embargo. The Committee recommended that the Society should not be represented at the Conference, and that the Council should re-affirm a resolution passed on several former occasions declaring “that, having regard to the importance of protecting the live stock of the country from the introduction of contagious diseases, the Royal Agricultural Society deprecates any proposals to repeal the Diseases of Animals Act, 1896.”

The EARL OF NORFOLK, in moving the adoption of the VETERINARY Committee's Report, called attention to a letter written by the Board of Agriculture in 1905 to the Governor-General of Canada which, he said, effectively disposed of the suggestion that those who opposed the introduction of Canadian Cattle were casting a stigma or discredit upon the live stock of the Dominion. The Board of Agriculture had then stated that :—

“The existing law does not cast any stigma or discredit upon Canadian Cattle, for it holds good not only in the case of the United States and other foreign countries, but also in that of every British Colony, including both Australia and New Zealand, whence live cattle have been lawfully imported into Great Britain. It is, in fact, a sanitary law, universal in application, of great importance to stock owners at home as a valuable safeguard against the introduction of disease, but not at all inconsistent with the transaction of a large and growing trade.”

Lord NORFOLK added that the protection of the cattle-breeding industry was a political matter in which the Council had no concern, but as an Agricultural Society they had a right to ask for protection from the risk of the introduction of disease, and to protest against any proposals for the repeal of the Act on which they depended to a very large extent for their security.

With regard to a paragraph in the Veterinary Committee's Report dealing with sheep scab, Lord NORFOLK said the Committee certainly held the opinion that the increase in the number of outbreaks was very unsatisfactory, and their widespread distribution throughout the country was even more disconcerting. He then read a reply to the Society's letter of December 17th last, which had been received that morning from the Ministry of Agriculture. He did not know how far the Council considered that letter satisfactory. No doubt there was something in the contention that it was too soon to estimate the effectiveness of the new measures. They recognised that the Ministry were taking action and were attacking those districts from which it was said the disease was spread. He could assure the Ministry that they might rely on the support of the Society in any measures taken for the eradication of sheep scab from this country.

A discussion ensued on the Veterinary Committee's Report, in which Mr. FALCONER, Mr. MIDDLETON, Sir ARTHUR HAZLERIGG, Mr. MANSELL and Mr. ROBERT GRAY took part.

The Report of the VETERINARY Committee was then adopted; and on the motion of Lord NORTHBROOK, seconded by Col. STANYFORTH, the Council re-affirmed the resolution deprecating any interference with the Diseases of Animals Act.

It was further decided that copies of the resolution should be sent to the Town Clerk of the City of London, the Chairman of the Cattle Markets Committee of the Corporation, to all bodies to whom invitations to the Conference had been sent, to the principal Agricultural and Breed Societies, and also to all Members of Parliament; and that it should be communicated to the Press.

The Hon. CECIL PARKER in moving the adoption of the SELECTION Committee's Report, expressed the sense of the loss the Committee had sustained through the retirement from the Chairmanship of Sir John Thorold. He endorsed the remarks of Col. C. CORNWALLIS regarding Sir John's retirement from the Journal Committee, and hoped that the Selection Committee might still have his invaluable counsel.

Mr. MIDWOOD—pursuant to notice—then proposed:—“That the subscription of Governors and Members should be doubled.” He said that he had put this motion on the agenda-paper owing to the fact that when he had brought the matter forward at the last meeting he had been ruled out of order. He was of opinion that such an increase in the subscription was the right thing to do, and was the simplest means of overcoming the shortness of cash from which the Society was suffering just at the moment. If they considered how much Members at present received in return for their minimum subscription of £1, they would see that there was no relation between the amount of the subscription and the privileges received. The admission money to the Show in itself was worth more than the subscription, and there were also the advantages to be derived from the chemical, botanical, zoological, veterinary, and other activities of the Society, as well as the “Journal” and the library. At the last meeting he had contended that not more than 25 per cent. of the Members would resign in consequence of an increase in the minimum subscription, and, if it were not presumptuous on his part, he would be quite prepared, to show his faith in his assertion, to guarantee the Society for three years against any loss of Members that might occur as the result of such a step, in excess of the 25 per cent. diminution in numbers.

Mr. FALCONER seconded the motion.

Mr. BROCKLEHURST said he understood the matter had already been considered by the Special Committee, whose opinion was that the suggested increase was not advisable. At the same time, he felt with Mr. Midwood, that the risk of the loss of Members resulting would not be serious, and he therefore supported the proposal.

Mr. ADEANE said he recognised that Mr. Midwood put forward his proposition from motives which were for the best interests of the Society, but he, as Chairman of the Special Committee, must point out that the proposal had been very thoroughly considered, and had been regarded as a very dangerous experiment if it were adopted. The Council would not be well advised to pass such a resolution.

Sir WALTER GILBEY was of the opinion that the present was certainly not an opportune time to adopt an increased subscription. If it ever became necessary to consider such a proposal from the point of view of the national importance of the Society, then they could call the Members together and discuss it, but they were not faced at the moment with any such crisis. Many Members of the Society hardly ever went to the Show, but they paid their subscription because they thought it their duty to support the Society.

The proposition was put to the meeting, and lost by an overwhelming majority.

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**WEDNESDAY, MARCH 2, 1921.**

Mr. R. M. GREAVES (President) in the Chair.

The PRESIDENT, in opening the proceedings, said it was with very great regret that he had formally to announce the death, on Monday last, of Lord Ranksborough, C.V.O., C.B., who had been the member of Council representing the Rutland Division since the year 1909. He was sure that the Council would wish that a letter should be forwarded by him, as President, to Lady Ranksborough, expressing the Council's sincere sympathy and condolences with her in the sad bereavement she had sustained.

Forty-four duly-nominated candidates were admitted into the Society as Members.

The Report of the FINANCE Committee was received and adopted, together with the accounts for 1920 and the Estimates for the ensuing year, as to which an explanatory statement was made by Mr. ADEANE.

On the motion of Mr. LUDDINGTON, seconded by Mr. FALCONER, a paragraph in the CHEMICAL Committee's Report relating to the Hills' Bequest was referred to the FINANCE Committee for consideration.

A suggestion was made by Major BEHRENS that the Council should reconsider their decision of the previous month not to send representatives to the Guildhall Conference on March 9th, on the question of the importation of Store Cattle. After some discussion, in which Colonel WHEELER, Mr. MANSELL, Mr. THORNTON and Lord NORBROOK took part, the following resolution was unanimously adopted on the motion of the Hon. CECIL T. PARKER, seconded by SIR GILBERT GREENALL, Bart.:-

"Attention having been called to the grave misstatements which have been made on the platform and in the Press since their meeting in February at which a resolution was passed that the Society should not be represented at the Guildhall Conference, the Council are of opinion that this resolution should be rescinded; that the Society, under the chairmanship, should be represented at the Guildhall meeting; that the necessary steps should be taken to carry out this decision; and that the Earl of Northbrook, the Right Hon. Sir Alwyn Fellowes and Mr. Davis Brown represent the Society at the Conference."

The SECRETARY read a report of the proceedings on the occasion of the deputation which waited upon the Chancellor of the Exchequer on February 17 last, to ask for the exemption of Agricultural Shows from Entertainments Tax. The Chancellor had explained his position, but could hold out no hope of any further modifications being made in favour of Agricultural Shows.

**WEDNESDAY, APRIL 6, 1921.**

Mr. R. M. GREAVES (President) in the Chair.

Three new Governors and 139 new Members were admitted into the Society.

The Report of the FINANCE Committee was presented, including a recommendation that the Council offer to the University of Cambridge the income from Hills' Bequest to be applied by the University in investigation in accordance with the terms of the bequest.

Mr. LUDDINGTON moved, as an amendment, that the interest on the fund should be given to the Lawes Trust instead of to the University of Cambridge. This was seconded by Mr. MIDDLETON.

After a short discussion the amendment was put to the meeting and defeated. The FINANCE Committee's Report as a whole was then adopted.

Col. CORNWALLIS, in moving the adoption of the Report of the JOURNAL AND EDUCATION Committee, announced that Mr. McRow had resigned his position as a member of the National Agricultural Examination Board,

and moved that Mr. Turner should be appointed in his place. This was seconded by Mr. MATHEWS, and carried.

The Hon. CECIL PARKER moved that Mr. Thomas McRow, the late Secretary of the Society, should be elected an honorary life member. This was seconded by Sir GILBERT GREENALL, and carried unanimously.

### WEDNESDAY, MAY 4, 1921.

Mr. R. M. GREAVES (President) in the Chair.

Twelve new Governors and 310 new Members were admitted into the Society.

The Report of the FINANCE Committee was received and adopted. In presenting this report, Mr. ADEANE said that at a meeting of representatives of Chambers of Agriculture, Agricultural and Breed Societies, on May 2, it had been unanimously resolved that the proposed removal of the embargo against the importation of store cattle should be opposed before the Royal Commission, and that a guarantee fund should be established to meet any expenses connected with the case to be presented in opposition. This resolution had been brought before the FINANCE Committee, and they unanimously resolved:—

"That the Council be recommended to agree to contribute to the guarantee fund on the basis of 1s. per member."

They would all agree, he thought, that as a question of such supreme importance to agriculture was now to be brought before a Royal Commission, the case against the proposed removal should be presented in the best possible way. It would have to be carefully prepared and legal advice would be required. If it was thought advisable to engage Counsel, considerable expense would be involved, but he did not think that they should shrink from that.

The resolution was seconded by Sir AILWYN FELLOWES and carried unanimously.

In moving the adoption of the VETERINARY Committee's Report, the EARL OF NORTHBROOK made reference to the Docking of Horses Bill, a measure brought in by a private member, Colonel Burn, under which it was proposed that no person should perform the operation of docking unless a member of the Royal College of Veterinary Surgeons "shall certify in writing that such operation is in his opinion necessary or otherwise for the benefit of the horse." That Bill, his Lordship said, had passed its second reading in the House of Commons and had been before a Standing Committee, which had reported the Bill without amendment. The great point he would like to emphasise was that the question of cruelty to animals did not arise, because under the Animals (Anesthetics) Act, 1919, it was provided that a horse should not be subjected to the operation of docking unless during the whole of the operation it was under the influence of some general anaesthetic or some local anaesthetic being, in either case, of sufficient power to prevent it feeling pain. In Standing Committee Colonel Burn had stated that many horse societies were against docking. That might be true, but no single society, as far as he (Lord Northbrook) knew, had passed a resolution in support of the Bill. On the contrary, the Shire Horse Society had passed a resolution condemning the Bill. He understood that the Clydesdale Society and other heavy horse societies had also passed similar resolutions. He believed the Hunters' Improvement Society as a society were not in favour of docking, but they also had passed a resolution in condemnation of this Bill. He did not want to discuss the merits or demerits of docking horses of particular breeds or of horses engaged in any particular sort of work, but, speaking for himself, even if the majority of the horse breeders and of the horse societies

in this country were opposed to the docking of horses, he would still oppose this Bill, because it sought to impose the wishes of the minority on the majority and interfered with liberty of action.

His Lordship also referred to another paragraph in the Committee's report dealing with the Diseases of Animals (Scotland) Bill, the object of which was to transfer to the Scottish Board of Agriculture the administration of the Diseases of Animals Acts in Scotland. That policy was strongly opposed by the Ministry of Agriculture in this country, and therefore the measure had little chance of success. It would be disastrous to breeders of animals if a second authority was set up, to deal with the administration of these Acts in Scotland.

Sir WALTER GILBEY, MR. MIDDLETON, MR. REA and MR. MANSELL also spoke in support of the Committee's recommendations.

The Report of the VETERINARY Committee was then adopted; and, on their recommendation, the following resolution was passed and ordered to be transmitted to the Ministry of Agriculture:—

"That having had their attention directed to the provisions of the Diseases of Animals (Scotland) Bill, the Council are strongly of opinion that the division of control or dual control in the administration of the Diseases of Animals Acts in Great Britain would be disastrous to the best interests of live stock breeders in the country."

On the motion of Lord NORTHBROOK, seconded by Mr. MANSELL, it was unanimously resolved that the Council fully associate themselves with the resolution passed by the Shire Horse Society:—

"That the Shire Horse Society of the United Kingdom, the largest British Bred Society and representing thousands of owners and breeders of the Shire Horse—the majority of whom are agriculturists—emphatically protests against the private Bill introduced in the House of Commons to prohibit the docking of horses; and most earnestly and seriously urges the Government to take the necessary steps to prevent the passage of the Bill, as this Society views with grave alarm the result such a measure would have upon the breeding and using of cart horses in agriculture."

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## WEDNESDAY, JUNE 1, 1921.

Mr. R. M. GREAVES (President) in the Chair.

Four new Governors and 256 new Members were admitted into the Society.

The Report of the FINANCE Committee was received and adopted; and on the motion of Mr. ADEANE, it was resolved:—

"That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society, on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a member during the forthcoming show at Derby, the formal election of such candidate to be considered by the Council at their next ordinary meeting."

Mr. A. P. TURNER, in presenting the Chemical and Woburn Committee's report, said it would be observed that it was proposed to hold the usual visit—which would be the last—to Woburn, and it was hoped that as many members of Council as possible would go and have a final look at the experiments before the farm was handed over.

Col. STANIFORTH, in moving the adoption of the report of the Implement Committee, said he was sure the Council would hear with very deep regret of the serious illness of the Hon. John E. Cross, in consequence of which he would be unable to undertake the duties of Steward of Implements at the Derby Show.

The PRESIDENT said it would, he thought, be the wish of the Council that the Secretary should write a letter to Mr. Cross expressing their sympathy with him in his prolonged illness.

It was reported from the Committee of Selection that H.R.H. The Duke of York had signified his willingness to allow his name to be put for-

ward at the Annual General Meeting in December for election as President of the Society for the year 1922.

The SECRETARY announced that the Trustees of the Queen Victoria Gifts Fund had decided to make a grant of £140 to the Royal Agricultural Benevolent Institution for the year 1921, to be devoted to grants of £10 each in respect of male candidates, married couples and female candidates, the actual distribution in each class to be left until after the election to pensions by the Royal Agricultural Benevolent Institution.

On the motion of the PRESIDENT, seconded by Mr. ADEANE, authority was given for the seal of the Society to be affixed to the agreements with the Corporations of Cambridge and Leicester in connection with the holding of the Annual Shows in 1922 and 1924 respectively.

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## THURSDAY, JUNE 30, 1921.

### HELD IN THE DERBY SHOWYARD.

MR. R. M. GREAVES (President) in the Chair.

The PRESIDENT said that, before commencing the ordinary business, he had to perform a very sad duty, which was all the sadder coming in the midst of a meeting which ought to be the happiest of the year. It was with great regret he had to announce the death of their very esteemed and dear old colleague, the Hon. John E. Cross. In asking them to pass a vote of condolence with the relatives in their bereavement, the PRESIDENT said he felt that no further words from him were needed.

The motion was passed in silence, those present signifying their assent by rising in their places.

At the suggestion of Mr. LUDDINGTON, permission was given for the usual invitations to be extended to Officials of the Ministry of Agriculture, &c., to be present on the occasion of the visit of the Council to the Woburn Experimental Farm.

On the motion of the Hon. CECIL PARKER, seconded by Mr. CHAPMAN, it was unanimously resolved:—

That the best thanks of the Society are due and are hereby tendered to—  
(1) The Official of the General Post Office, for the efficient postal arrangements made in connection with the Show;  
(2) The Chief Commissioner of Police, for the efficient services rendered by the detachment of Metropolitan Police on duty in the Showyard;  
(3) The Chief Constable of Derby, for the efficient Police arrangements in connection with the Show;  
(4) The St. John Ambulance Brigade, No. 5 (North-Eastern) District, for the efficient Ambulance arrangements in the Showyard;  
(5) Messrs. Barclay & Co., Ltd., Local Bankers, for the efficient services rendered by their officials;  
(6) Messrs. Merryweather & Sons, Ltd., for the provision of fire appliances and for the efficient arrangements made by them in connection with the Fire Station in the Showyard;  
(7) The Midland Drapery Co., Derby, for decorating and furnishing the Royal Pavilion;  
(8) Messrs. Barron & Sons, for providing floral decorations in the Showyard;  
(9) Messrs. Marshall, Sons & Co., Ltd., for the loan of a Steam Engine for supplying motive power to the Dairy.

Instructions were given for letters of thanks to be sent to various other individuals and firms for assistance kindly rendered and for the loan of articles for the purposes of the Show.

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**Proceedings at the  
General Meeting of Governors and Members,**

HELD IN THE LARGE TENT IN THE SHOWYARD AT DERBY,

**THURSDAY, JUNE 30, 1921.**

**MR. R. M. GREAVES (PRESIDENT) IN THE CHAIR.**

**President's Remarks.**

The PRESIDENT, in opening the proceedings, said it gave him the greatest satisfaction to preside at a general meeting held in connection with that very successful Show. It was, he felt, a matter of the utmost satisfaction to all of them to be able to say that, despite the difficulties which had been working against them, they had got together a record show. (Hear, hear.) That result was particularly gratifying when they realised that only a little time ago things looked very dark indeed. At one time there had been considerable doubt as to what the railway companies would be able to do for them, and as to whether they would be able to get all the exhibits of stock, implements, etc., to the Showground. There was also the dark cloud caused by the outbreaks of foot-and-mouth disease, and this did very much alarm them. Therefore they would all feel a greater satisfaction that these difficulties had been overcome. The Show was one of which they could all be proud. (Applause.) They had never had such a big Show, with every section so well represented, as at this year's exhibition. New breeds had been introduced, and there were a great many new implements; and, looking at matters of finance, the admissions at the gate, so far, had been very satisfactory. Of course, in these days of restricted train services and other difficulties they could not expect quite the Darlington attendances, but he considered it wonderful how the people had turned up and the keenness that was manifested. Certainly it spoke well for the popularity of the Show that, notwithstanding all the difficulties, the people were determined to give it their support.

**Mayor and Corporation Thanked.**

Lieut.-Colonel E. W. STANFORTH proposed: "That the best thanks of the Society are due and are hereby tendered to the Mayor and Corporation of Derby for their cordial reception of the Society." The success of the Show, he said, depended very largely on the efforts of the Mayor and Corporation of the town visited, and he was sure that all connected with this year's Show were perfectly satisfied with what the Mayor and Corporation had accomplished. From the outset they had laboured most ungrudgingly to ensure the success of the Show. Those who recalled the great success that had attended their visit to Derby in 1906 would also remember the cordial reception the Society then received from the Mayor and Corporation; but, if possible, the reception accorded them on the present occasion exceeded in cordiality that of fifteen years ago. There would be another resolution submitted to the meeting, and he did not desire to infringe on that, but he wished to take that opportunity of saying how very grateful they were to the Mayor and Corporation for all they had achieved.

Mr. ALFRED MANSELL had great pleasure in seconding the proposition. Having been Local Secretary on the occasion of the Society's visit to Shrewsbury, he was, he said, in a position to know what arduous work fell to the lot of the Mayor and Corporation.

The vote having been passed with acclamation,

The MAYOR OF DERBY (Alderman Laurie) said he considered it a great honour and a great responsibility to prepare for the visit of the Royal Agricultural Society's Show to Derby, because it had done so well there

fifteen years ago, and they did not wish to go back on that record. He had no desire to claim all the credit for the Corporation; they ought to include the county for all they had done to help to make the visit a great success. He was exceedingly glad that the weather and all other conditions had been so good, and that the Show bid fair to be one of the greatest in the history of the Society. He desired to refer to the very able and untiring efforts of the Town Clerk (Mr. G. Trevelyan Lee), who had thrown himself heart and soul into the work connected with the Show. If the Royal Agricultural Society brought their Show to Derby fifteen years hence he hoped it would be a greater success than ever. (Applause.)

**Thanks to Local Committee.**

Sir GILBERT GREENALL (Honorary Director) said the resolution he had to propose was one he was sure would meet with their cordial support. It was: "That the best thanks of the Society are due and are hereby tendered to the Derby Local Committee for their exertions to promote the success of the Show." There was no doubt the Show would be a success, and the people who had done more than anyone else to bring about that result had been the Local Committee. They had been working for between two and three years for this Show. It had been a hard, uphill fight, for the local fund in these days had to be a very large one indeed. If it had not been for the hard work the Local Committee had put in, it would have been impossible to hold the Show on such a scale as it was to-day. The Local Secretaries, Mr. G. Trevelyan Lee (Town Clerk) and Mr. Andrew Smith (Secretary of the Derbyshire Agricultural Society), had done magnificent work. They would all be glad to see that Mr. Smith had recovered from his recent illness. He was sure they all appreciated to the full the efforts the Local Committee had made. (Applause.)

Mr. PERCY CRUTCHLEY fully endorsed every word Sir Gilbert had said. The Council and the Society in general, he said, were most deeply indebted to the Local Committee for their successful efforts. He begged most heartily to second the motion.

The resolution was carried unanimously.

Capt. H. FITZHERBERT WRIGHT, on behalf of the Local Committee, expressed their thanks for the resolution which had been passed. They had, he said, done their best, and nothing would give them greater satisfaction than that the Show should ultimately prove to be the success they at that moment anticipated it would be. If one member had done more for the success of the Show than anyone else it was Mr. Roland Burke. He really should have responded to the vote.

**Railway Companies Thanked.**

Mr. WILLIAM HARRISON moved: "That the best thanks of the Society are due and are hereby tendered to the railway companies for the facilities afforded by them in connection with the Show." As the President had said in his opening speech, it was remarkable that they had been able to collect together the largest exhibition of stock and implements the Society had ever had. This was entirely due to the efforts put forward by the railway companies. In these times they had hardly expected to be so successful in getting the exhibits to the Show. He had much pleasure in moving the resolution, and he would like specially to mention the names of Mr. Followes, Mr. Loney and Mr. Horton, to whose exertions they were indebted for the arrival of the exhibits on the Show ground.

Lord HARLECH seconded the vote, which was unanimously accorded by the meeting.

**Special Representation on Council.**

Lord BLENDISLOE then moved: "That special representation on the Council be given to Agricultural Science, Research and Education, and

that it be referred to the Council to consider the best means of carrying this into effect." His Lordship said that in the Original Charter, dating back to 1840, out of the ten objects mentioned eight related to the promotion of science in some form or another. In the Supplemental Charter under which the Council was reconstituted in 1905 provision was made for "the addition to the Council of Members being Governors or Members of the said Society to be from time to time appointed by the Council, and being persons distinguished in science or engaged or interested in some industry connected directly or indirectly with agriculture whose presence on the Council is considered by the Council desirable," but "not more than ten persons so appointed shall at any one time be in office."

The Society, acting under the Supplemental Charter, made by-laws, one of which stated that "there shall be a Council of the Society, and the Council shall consist of (1) the President, twelve Trustees and twelve Vice-Presidents ; (2) *not more than ten persons (being Governors or Members of the Society) appointed by the Council (hereinafter referred to as nominated Members of the Council)* ; and (3) such other persons (being Governors or Members of the Society) as may be elected by divisions of the Society, pursuant to the by-laws."

The nominated Members of the Council must be persons distinguished in science, or engaged or interested in some industry connected directly or indirectly with agriculture. That, his Lordship said, was a mandatory by-law, but he understood that that by-law and the article in the Charter had never been acted upon. He did not hesitate to say that his motion was to some extent stimulated by the abandonment—in the eyes of the Council the necessary abandonment—of agricultural experiment and research as carried on at Woburn for the past fifty years. He considered it would be a thousand pities if, with the motto "Practice with Science," the impression should get abroad throughout the whole world that the Society was in any way relaxing its interest in agricultural science and research. He did not know whether the Council would be prepared to act on their own by-law and Charter, but he suggested that the time had arrived when they should make their position quite clear to agricultural scientists that even if the Society had abandoned Woburn they did not intend to dissociate themselves completely from science and research. It had been suggested to him that as a back-bencher and an ordinary member he had been over-bold in bringing this matter forward, but he did so in a threefold capacity—as a Silver Medallist, a Life Member by examination, and as chairman of the oldest agricultural college in the kingdom. They had always regretted that when the Society obtained its new Charter it did not find a place on its governing body for some of those to whom it had given its medals and life membership. As a member of the Chemical Societies he could say that they had viewed with apprehension and regret the unfortunate decision that the work at Woburn should be abandoned. The work carried on there had been of immense national importance, and was a necessary complement as regards soil problems to the work carried out at Rothamsted. It was hoped and believed that the Lawes' Agricultural Trust would be able to carry on this useful work. The time had come when the premier Agricultural Society of England could not afford to rest its whole credit upon an annual exhibition of live stock, invaluable as that work might be, but as time went on they would feel that it was increasingly necessary to show a real interest in agricultural research and education, and it was with that object he moved the resolution.

Sir HENRY REW, in seconding the motion, said the Farmers' Club, which included amongst its members many distinguished representatives of agricultural science, felt it was time the Royal Agricultural Society moved in the direction the resolution indicated. He was quite sure that members would realise that this motion was brought forward not as criticism, but as suggestion. They had no fault to find with the personnel of the

present Council, and did not suggest that any single one of them should be replaced, but they wished the Council to take into consideration the terms of the Charter and associate with themselves representatives of agricultural science, education and research.

Mr. P. J. PARMENTER (Tisbury) suggested that the Society should be run on lines not so much "Royal" as national. Very large sums were spent in prizes for stock that might be better spent in scientific development. Smaller men could not afford to get their stock up for exhibition; consequently these smaller men did not get the encouragement they needed. The Show ought, he contended, to be run more on scientific lines rather than on those of a circus. (Laughter.)

Mr. H. MATTHEWS (Winterbourne, Bristol), speaking as a farmer, expressed the hope that scientific work would not be dropped. He expressed regret that they had discontinued the giving of prizes for the best cultivated farms. In his opinion the farm competition was one of the best things ever done by the Society. He desired to support Lord Bledisloe.

The PRESIDENT said the question raised in the resolution required great consideration by the Council, but he could assure those present that it would receive sympathetic consideration. The question needed much thought, and he would feel obliged if the mover and seconder would allow it to be a request for consideration rather than a resolution.

Lord BLEDISLOE said he had been asked to press definitely for representation on the Council for science, research and education, but he considered the resolution as submitted left the final choice to the discretion of the Council. He really did not feel that he could weaken the terms of the motion, as he felt he had the support of the whole of the agricultural community.

The resolution was then put to the meeting and carried.

The PRESIDENT promised that the matter should receive the earnest and attentive consideration of the Council. He need not tell the meeting that stern necessity was the reason for giving up Woburn. They must cut their coat according to the cloth, and something had to go.

#### Members' Remarks and Suggestions.

Mr. ELDRED WALKER (Chew Stoke, Bristol) stated that there had been some heavy casualties in the pig section, and in nearly every case it was found, he said, that the animals had been brought to the Show in horse-boxes which were insufficiently ventilated. He hoped that the Society would bring this matter to the notice of the railway companies. They should be requested to remove the embargo on pigs of more than 3 cwt. being carried by ordinary trains. If the Society would consult the companies, he thought something might be done. Pig-breeders could not face long distances under present transport conditions.

The PRESIDENT said the matter would be gone into.

#### Thanks to President.

Mr. JAMES WATT (Knowefield, Carlisle) moved a cordial vote of thanks to Mr. Greaves for his services in the Chair. In doing so, he asked him not to consider the turnstiles as any indication of the measure of the recognition of his services. With transport so difficult, the wonder was that they had such an assemblage of exhibits, and of those who came to admire them. They were passing through serious times, and he hoped the day was not far distant when the Prime Minister would be able to change his taxation tactics. (Laughter.) They were driving from them the pride of the country, and the envy and the admiration of foreign countries, when they were driving off the noblemen from the land. Those who succeeded them would not have the same generous noblemen to meet them when they had a repetition of 1878. They would have to go to their bankers, who

would tell them to sell the property. Hitherto when they got into difficulties the generous nobleman would say : "Well, you have been good tenants, we will wipe off the rent." Those days had gone, unfortunately, for this country. Still, there was one bright side : the lawyers would get a good pull out of the land. (Laughter.) They were busy at it now, and they would get it again ten years hence.

Lieut.-Colonel LYON seconded the motion, which was carried with acclamation.

The PRESIDENT, in expressing his thanks for the vote, acknowledged the great support he had received from all concerned with the Show, from the Sovereign of the Realm downwards. If any man had occasion to feel grateful and proud, it was himself. Ever since he arrived in Derby he had had nothing but kindness.

The proceedings then terminated.

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### WEDNESDAY, JULY 27, 1921.

Mr. R. M. GREAVES (President) in the Chair.

Eleven new Governors and 339 new Members were admitted into the Society.

The Report of the FINANCE Committee was received and adopted. Mr. ADEANE, in presenting this report, stated that the financial result of the recent Show at Derby was exceedingly satisfactory, and would go a long way towards recouping the Society for the loss on the Darlington Show.

On the motion of Mr. ADEANE, seconded by the Hon. CECIL PARKER, it was resolved :—

"That in order to facilitate the winding up of the accounts for the Derby Show as early as possible, authority be given for the issue during the recess of orders on the Society's Banker for the payment of accounts connected with the Show."

A Report was presented from the CHEMICAL AND WOBURN Committee, including a recommendation that the equipment of the Laboratory and Pot Culture Station at Woburn should be left for the use of Dr. Voelcker, as the Committee understood that it was his intention to carry on as far as possible the work of the Station. The Committee also recommended the granting of pensions to two of the farm servants at Woburn who had been in the Society's employ for many years.

After some discussion, the question of the disposal of the equipment of the Laboratory and Pot Culture Station was, on the motion of Mr. ADEANE, seconded by the Hon. CECIL PARKER, referred for consideration to a Committee consisting of Mr. Luddington, Sir Gilbert Greenall and Mr. Adeane.

With regard to the pensioning of the two farm servants, Mr. ADEANE explained that, as the Secretary was going to Woburn in connection with the visit of the Council, the Finance Committee thought that he should take the opportunity to see these men to ascertain what their condition was and what would be fair treatment. He could then report to the Finance Committee in November, when that Committee would consider the matter and make some suggestion to the Council. Meanwhile, they had empowered the Secretary to pay these men what was fair and necessary after the termination of their engagements on September 29th.

The Report of the CHEMICAL AND WOBURN Committee, subject to these amendments, was received and adopted.

The Report of the BOTANICAL AND ZOOLOGICAL Committee was presented, and, in moving its adoption, Sir ARTHUR HAZLEROOG said that, as the Chairman of the Committee was not present, he thought perhaps the members of the Committee would like him to express their thanks to Mr. Coltman-Rogers for all the work that he had done in connection with the Plantations Competition, and for putting up the Judges and transporting

them. Perhaps he ought to explain why the names of so many people were included in the report. As the Committee had been much curtailed for money, they had had to get a lot of people to help them with the loan of motor-cars and in other ways, and, as a result, he believed they had been able to keep very well inside the amount of money allowed by the Finance Committee. Therefore they had put in all the names of those who had helped them and also those who had exhibited for the sake of the Show to make it more interesting. He wished to draw attention to two points in connection with finance.

Firstly, that for the Plantations Competition the Finance Committee only allowed a sum of £50 on condition that they took the entry-fees. The entry-fees for the Competition amounted to £43 18s., so that the Royal Agricultural Society only gave the sum of £6 2s. towards the Competition. The Botanical and Zoological Committee felt that, without wishing to be extravagant, or trying to base any argument on the successful result of this year's Show, they ought to be dealt with more liberally in the future. If these Plantations Competitions were to be really useful, the Committee must have a sufficient grant to be able to pay for the expenses of the Judges and also to be in a position to give them an honorarium for all the work they had to do. At present the Committee were handicapped in their work by the lack of funds and by having to cadge round the counties for hospitality and transport for the Judges.

Secondly, he wished to bring before the Council the pasteboard certificates which they had had to issue this year instead of medals. The Committee were very much disappointed with them, and, as the saving was only £12 or £13, they hoped that they might be allowed to revert to the practice of giving gold, silver and bronze medals as prizes for Plantations.

Sir GILBERT GREENALL pointed out that the "Royal" gave much more than £6 for Forestry, as they erected a costly tent for the Forestry exhibition.

Sir ARTHUR HAZLERIGG admitted this fully, and replied that he was only speaking of the cost of the Plantations Competition.

Lord AILWYN asked why, as the Show next year would be an Eastern Counties' Show, Norfolk, Suffolk and Lincolnshire had not been included in the proposed area for the Plantations Competition in 1922.

Sir ARTHUR HAZLERIGG said that the Committee had been carefully through the areas for the different shows, and the Eastern Counties had been included in the Norwich year. They could not always arrange for the Plantations area to correspond with the locality in which the Show was held. They hoped at some future date they might have a Plantations Competition in the South, where the Show was not held.

The Report of the BOTANICAL AND ZOOLOGICAL Committee was then adopted.

Consideration was then given to the following resolution passed at the General Meeting of Governors and Members in the Showyard at Derby:—

"That special representation on the Council be given to agricultural science, research and education, and that it be referred to the Council to consider the best means of carrying this into effect."

The Hon. CECIL PARKER said this was a matter that required a good deal of consideration. He begged, therefore, to move that it be referred to the Committee of Selection. Mr. CHAPMAN seconded the motion, which was carried unanimously.

The Council also had before them the remarks made by Mr. H. Matthews at the General Meeting, in which he expressed regret at the discontinuance of the Farm Prize Competition. Sir GILBERT GREENALL explained the circumstances in which these competitions were revived some years ago, and also the reasons which induced the Council to discontinue them. It was agreed to take no action in the matter.

**WEDNESDAY, NOVEMBER 2, 1921.**

Mr. R. M. GREAVES (President) in the Chair.

Five Governors and 60 Members were admitted into the Society.

Sir ARTHUR HAZLERIGO, in presenting the Report of the BOTANICAL AND ZOOLOGICAL Committee, said the Committee had sat so late on the previous day that they were unable to bring before the Finance Committee their recommendation for a grant of £100 instead of £50. He hoped, however, the Botanical Committee might be allowed to revert to the practice of offering medals for plantations as in 1920.

Mr. ADEANE said he was sure the Finance Committee would raise no objection. He understood that the Society would take the fees, and that the total cost of the competitions would not exceed £100.

The Report of the VETERINARY Committee was received and adopted, and Lord NORTHBROOK then moved the following resolution:—

"That the Council of this Society having carefully considered the Report of the Royal Commission on the Importation of Store Cattle, view with grave concern the findings of the Commission, and are more than ever convinced that any alteration in the Diseases of Animals Act, 1898, would eventually be detrimental to the production of home-grown cattle and consequently to the fresh meat supply of this country."

Lord STRACHIE seconded the motion, which was also supported by Mr. HENRY OVERMAN, Mr. ROBERT GRAY, Major G. R. LANE-FOX, Mr. ALFRED MANSELL, Mr. JOHN EVENS, Mr. H. DENT BROCKLEHURST and Sir WALTER GILBERT. Mr. JAMES FALCONER spoke against the motion. On being put to the meeting, the resolution was passed with one dissentient.

Sir DOUGLAS NEWTON (a member of the Cambridge Local Committee) expressed the hope that the Society, with all the power that lay behind it, would do its best to see that machinery was developed on lines required by agriculturists. Hedge-cutting machinery and machines for cleaning out brooks and drains were instances where development was called for.

Mr. ADEANE explained that the Society had in the past done a great deal for the advancement and development of agricultural machinery, and only last year had carried out an exhaustive trial of agricultural tractors which involved the expenditure of £4,000.

Mr. FALCONER thought the Society should offer prizes or medals for inventions, instead of first waiting for the manufacturers to make the machines.

Mr. HARRISON said the Society had done a great service in fostering the invention and introduction of agricultural machinery. Machines for hedge-cutting and ditch-cleaning were made years ago, but the sale was so small that no manufacturer was justified in making them. Manufacturers could not undertake to produce a machine unless it was an economic proposition. He could assure the previous speakers, however, that everything possible was being done by manufacturers to introduce new machinery for agriculture.

Mr. COMBES thought that for the future it might be well to make a new departure, and not allow their ideas to run so much in grooves as in the past. Money spent on tractor trials was all right in a way, but their hope of salvation did not lie in the question as to which was the best tractor. He hoped energy would be devoted to the bringing out of new implements.

The Hon. CECIL T. PARKER, in moving the adoption of the report of the Selection Committee, stated that it was the unanimous recommendation of that Committee that Sir Gilbert Greenall be re-appointed as Honorary Director. He was sure it would meet with the approval of all exhibitors and members generally, and it would be one more debt they owed to Sir Gilbert.

The Report of the Council to the Annual General Meeting of Governors

and Members, to be held at the Royal Agricultural Hall, Islington, at 2.30 p.m. on Wednesday, December 7, was prepared and ordered to be issued.

On a motion from the Chair, the seal of the Society was ordered to be affixed to the agreement with the Corporation of Newcastle-upon-Tyne in connection with the holding of the Show in that city in 1923.

At the suggestion of Sir GILBERT GREENALL it was decided that the Council meetings in future should take place at 11.15 a.m., and the meetings of the General Cambridge Committee at 10.30 a.m.

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**WEDNESDAY, DECEMBER 7, 1921.**

Mr. R. M. GREAVES (President) in the Chair.

Four Governors and 35 Members were admitted into the Society.

The Report of the Finance Committee was received and adopted. In presenting the financial results of the Derby Show, Mr. ADEANE said it would be remembered that, owing to the great loss which occurred at Darlington, a Special Committee was appointed to go fully into the finances not only of the Show but of the Society, and that committee made very drastic recommendations with regard to the Show. It raised very materially the entry fees and the charges generally, and he thought it was largely due to those recommendations, which had been adopted by the Council, that the results at Derby were so satisfactory. At this time last year the loss on the Darlington Show was £7,766, and subsequently the Society made a contribution to make up the deficit on the local Darlington Fund of £2,000, so that the actual loss on the Darlington Show was £9,766. This year the Show accounts indicated a credit balance of £9,621, after setting aside £1,500 as a reserve for the renewal of timber, in accordance with the Special Committee's recommendation, for it would be remembered that a great deal of the loss at Darlington was owing to the charge of something like £7,000 for timber. If this £1,500 had not been charged to the Derby Show account the balance on that Show would have been £11,121, the largest in the history of the Society, with the exception of the Cardiff record of £12,039. That large surplus had been realised partly by the increased fees and very largely by saving in expenditure. The financial results of a Show, however, could not be secured by paper estimates, and for such success as they had experienced they must look to contributory causes. At Derby they had the honour of a visit from His Majesty the King, they had the very hearty co-operation of the Mayor and Corporation and of the Local Committee, and they had with them, as he hoped they long would have, their Honorary Director, Sir Gilbert Greenall. (Applause.) In addition, they had the most remarkable weather.

Mr. EADIE expressed the pleasure he felt, as a representative of Derbyshire, that the Show had been such a success.

The accounts of the Derby Show were then formally received and adopted.

Mr. ADEANE said he had next to deal with the recommendation of the Finance Committee as to Dr. Voelcker's position with the Society, and to move, in accordance with such recommendation, that a sub-committee be appointed to consider the reappointment and remuneration of Dr. Voelcker as Consulting Chemist to the Society, and that the sub-committee should consist of Lord Strachan, Sir Arthur Hazlerigg and Mr. Henry Overman, whose decision was to be final. Dr. Voelcker's appointment ended in the ordinary way on December 31, but as the Council would not meet again until February, Dr. Voelcker would, of course, continue as at present,

and in February they would have the report of the sub-committee before them.

Mr. LUDDINGTON seconded the proposition, which was adopted.

A Report was received and adopted from the CHEMICAL AND WOBURN Committee; and, on the motion of Mr. Luddington, Professor William Somerville and Mr. C. Dampier Whetham were added to the Committee for the ensuing year.

Lord BLEDISLOE, as Chairman of Rothamsted, expressed gratitute to the Society for allowing the Pot Culture Station equipment to remain where it was for the use of Dr. Voelcker. As the Council were aware, Dr. Voelcker, in continuing the work at Woburn, had only been permitted to enjoy the grant of £500 a year from the Ministry of Agriculture on condition that the station was supervised by some authoritative body, and that body was the Lawes Agricultural Trust, of which his Lordship was Chairman.

He did not know the details of the calculations upon which Dr. Voelcker's future remuneration had been arrived at, but he ventured to express the hope that nothing ungenerous would be done to so old and valued a servant of the Society.

The Report of the BOTANICAL AND ZOOLOGICAL Committee was presented by Mr. COLTMAN-ROGERS, who stated that on the previous day the Committee had had a most satisfactory meeting with members of the Local Committee which had been appointed in connection with the Plantations Competition. The meeting had been well attended, and he was sure they were all very grateful to those gentlemen who had come long distances to be present. He hoped that the schedule for the Plantations Competition and the Forestry Exhibition would shortly be in the hands of woodland estate owners resident in the different counties comprising the area in which the competition would be held next year.

A suggestion was made by Sir Douglas Newton that, in view of the importance of fruit culture in Cambridgeshire, the Society might, in connection with the 1922 Show, usefully offer some encouragement to stimulate the development of Orchards on up-to-date lines. He asked the Council to devote a sum of, say, £300 to be used for this purpose.

A discussion ensued, in which Lord BLEDISLOE, Mr. BROCKLEHURST, Col. WHEELER, Mr. COLTMAN-ROGERS, Sir WALTER GILBEY, Sir GILBERT GREENALL, Col. CORNWALLIS and Mr. ADEANE took part.

The proposal was eventually referred for consideration to the Committee of Selection, on the motion of Col. Wheeler, seconded by Sir Gilbert Greenall.

The Report of the Committee of Selection was received and adopted, including a recommendation that Professor William Somerville, M.A., B.Sc., of Oxford, and Mr. C. Dampier Whetham, M.A., F.R.S., of Cambridge, be appointed as "Nominated Members" of Council for a term of three years.

Col. WHEELER said he thought there had been a suggestion, when the Council decided to give up Woburn, that there should be a committee to consider the question of the scientific work of the Society. He was anxious to know if anything had been done.

Lord BLEDISLOE asked to be allowed, in that connection, to thank the Council for their acquiescence in the proposal he had made at the General Meeting in the Derby Showyard by the appointment of two scientists as "Nominated Members" of the Council. He thought it might be well to consult those gentlemen who had been added to the Council as scientists before the Society extended its scientific work.

The PRESIDENT reported that there were present at the meeting four new members of Council—Lord Bledisloe, Mr. Lewis Dodd, Major David Davies and Colonel Courthope. He had great pleasure on behalf of the Council in extending to them a hearty welcome.

On the motion of the PRESIDENT, seconded by Mr. ADEANE, the Council unanimously passed the following resolution, which was ordered to be communicated to His Grace the Duke of Bedford:—

"That the best thanks of the Council of the Royal Agricultural Society of England be and are hereby tendered to His Grace the Duke of Bedford, K.G., on the occasion of the Society relinquishing the tenancy of the Woburn Experimental Farm, for the great generosity extended to the Society by His Grace and his predecessors in connection with this farm.

"The work at Woburn was inaugurated in the year 1876, and was made possible by the Seventh Duke of Bedford placing at the disposal of the Society the Crawley Mill Farm of about 120 acres, with house and buildings, and equipping and stocking such farm for the purposes of carrying out research work and experiments and obtaining reliable data for the guidance of farmers and others regarding unexhausted improvements and manipulations, and for the purpose of comparison or check on experimental work of a similar nature being carried on at Rothamsted.

"In addition to granting the tenancy of the farm to the Society, the Duke expressed the desire that the additional buildings necessary for the conduct of the experiments should be built entirely at his expense.

"From the year 1876 to the year 1913, the successors of the Seventh Duke annually granted a sum averaging about £600 for the upkeep of the Woburn Farm and the conduct of all the experiments.

"The work of the farm and the scientific research carried on there have enabled the Society to compile records which have proved to be of great practical value to the whole of the agricultural community."

The following Standing Committees were appointed for 1922:—Finance, Journal and Education, Chemical, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, and Dairy and Produce. The present members of the various Standing Committees were (with some exceptions) reappointed to those Committees. The Duke of Devonshire, Lord Harlech and Mr. R. M. Greaves were added to the Committee of Selection. The Duke of Devonshire was also added to the Finance Committee; Lord Bledisloe to the Journal and Education and Chemical Committees; Lt.-Col. G. L. Courthope to the Journal and Education, Botanical and Zoological and Implement Committees; Mr. T. B. Silcock to the Chemical and Stock Prizes Committees; Mr. J. L. Luddington to the Botanical and Zoological Committee; Mr. E. Guy Fenwick to the Veterinary, Stock Prizes and Dairy and Produce Committees; Mr. A. M. Montgomery to the Veterinary Committee; Mr. F. H. Thornton to the Veterinary Committee; Mr. Hubert Groom to the Stock Prizes and Dairy and Produce Committees; and Sir Merrick R. Burrell, Bart., to the Showyard Works Committee.

## Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON.

WEDNESDAY, DECEMBER 7, 1921.

MR. R. M. GREAVES (PRESIDENT) IN THE CHAIR.

### President's Opening Remarks.

Before commencing the regular business on the agenda, the PRESIDENT said he thought they should take that opportunity of the first meeting of the Governors and Members of the Society since the announcement of the engagement of Princess Mary to tender their sincere and humble congratulations to their Patron, His Majesty the King. (Applause.) The Royal Family had always evinced a keen interest in the work of the Society, and had frequently filled the presidential chair. Princess Mary was adored by the whole nation, and he was sure that it was with feelings of great gratification that they learnt that she was to marry an Englishman, and remain to take an active part in the life of this country, for which she was so well adapted.

Lord AILWYN said that, coming from the county in which Her Royal Highness and the Royal House so often resided, he would like to be allowed to second this vote. He was sure that every member of the premier Agricultural Society in the country would echo the words that their President had said about Her Royal Highness, and he might say that he was sure that they were all glad that she was going to marry such a gallant soldier, and a man who, he knew, took a deep interest in their industry.

The motion was unanimously adopted.

The PRESIDENT, continuing, said the first thing he would like to do was to express their sincere thanks to the Smithfield Club and the Royal Agricultural Hall Company for the use of that very commodious room for the general meeting. Those present had the Report of the Council before them, and it would be seen from it that the Society had to deplore the loss of many Governors and Members during the past year, but it was satisfactory to feel that in spite of that their membership was steadily increasing. The present membership, as shown in the Report, of 12,918 was the largest in the history of the Society, but he must say that, when they considered that agriculture was still the largest industry in the country, and employed the largest number of people, their membership was not what it ought to be. He would appeal to everyone in that room, and through them to every member of the Society, to use their influence to get new subscribers. Looking back over the past year, the Derby Show had been a great success in every way. The weather was excellent, and they were favoured with a visit from His Majesty the King. The great reception His Majesty met with at Derby showed that the honour was fully appreciated. As to the Show itself, it was one of the finest ever held by the Society, the exhibits, both of implements and stock, were magnificent, and demonstrated that progress was still being made in every department of agriculture. The fact that the Show was so successful in spite of its being held in the middle of the coal strike—which naturally alarmed them very much—proved that it had lost none of its interest. The arrangements and general lay-out left nothing to be desired, and for this the Society had once again to thank their Honorary Director, Sir Gilbert Greenall. (Applause.) He was glad to know that the members present all appreciated what Sir Gilbert had done. This year several

economies were introduced, which, while not detracting from the Show, added very largely to the financial result.

The reception of the Society by the town and county of Derby had been most cordial in every possible way, and it was largely due to the untiring efforts of the Local Committee that the Show had been so successful, and in this connection they must also remember what they owed to exhibitors, both in the stock and implement departments. When the position had been put before the exhibitors and they saw how things were they had willingly acquiesced in paying higher fees, which the Society had been obliged to ask them to do. The visit of the Society to Derby was delightful in every way, and would ever remain a happy memory to all of them who had been able to attend it.

The Show next year, as they knew, would be at Cambridge, and from the whole-hearted way in which the Local Committee was working, and also from the fact that the Breed Societies had already intimated their willingness once more to assist the Society in providing prizes, etc., he had little doubt that Cambridge, too, would be a great success. Everything pointed to it.

The first business on the agenda was the presentation of the balance-sheet, which would be found in the appendix to Vol. 81 of the Journal issued to members this year. The statement of receipts and expenditure in connection with the Derby Show was in the hands of those present at the meeting. He felt sure that they would consider them very satisfactory. The report of the Council had been printed and circulated through the post to each member, and the meeting would probably be willing that it should be taken as read.

#### **Adoption of Report.**

Sir ARTHUR GRIFFITH-BOSCAWEN said he had been asked, as an ordinary member of the Society, to move the adoption of the report. He did so with the greatest pleasure, for the report was a record of very good and useful and, he was glad to think, successful work. There were many points in regard to which they at the Ministry of Agriculture could learn from the Royal Agricultural Society, and they were always very careful to keep on good terms with the Society. (Laughter.) He desired to acknowledge the very kind help that the Ministry constantly received on many subjects from the indefatigable Honorary Director of the Society, Sir Gilbert Greenall. The only other observation he would like to make was to say how gratified they must all be to know that the Royal Family took such a practical interest in our oldest and greatest industry of agriculture.

Mr. J. J. CRIDLAN seconded the motion for the adoption of the report, remarking that he was glad to do so, inasmuch as he had used a somewhat critical pen regarding the procedure of the Council of the Society. After Darlington the Society were rather panicky, and raised the entrance fees for the Derby Show, but this had not brought about the adverse result—and he was pleased to say so—that he had predicted. He hoped that as Derby had been such a success the Council could now see their way to reduce the very heavy entrance fees, especially as the cost of freight and food for the animals was so high. He was glad to know that the "Royal" was considering the question of approaching the railway companies to secure reduced rates if possible. He wished to congratulate the President that in his year of office the Society had had such a great success at Derby, and to say that the Council of the Smithfield Club—that still greater Society (laughter)—looked upon the success of the Royal as adding to their success at the Cattle Show during that week. He also congratulated the Society on the achievement of the Agricultural Relief of Allies Committee, which had raised a quarter of a million for the help of the farmers in the devastated

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districts of our Allies, and, according to reports from the centres in which help had been given, had done a great deal to alleviate the position there.

The proposition was carried.

**Election of President.**

Mr. C. ADEANE, C.B., then proposed the name of H.R.H. the Duke of York as President of the Society for the ensuing year. The Duke, he said, was no stranger to the Society, since he had been with them at Darlington, where he evinced the greatest interest in the exhibits, and they knew that he was thoroughly interested in agriculture. By accepting the Presidency of the Society His Royal Highness was maintaining the close connection between the Royal House and the Society which had existed since the formation of the Society, and they were very grateful to him for accepting the office. As the Show was to be held next year at Cambridge, His Royal Highness would doubtless renew his acquaintance with the University town where he had spent a very happy year—in spite of the proctors—(laughter)—and he would be certain of a very hearty welcome when he went back to the county as the President of the Royal Agricultural Society. (Applause.)

Sir J. B. BOWEN-JONES seconded, observing that, in undertaking the duties which they were asking him to carry out, the Duke of York would be following in the footsteps of the Royal House since the establishment of the Society. As the oldest member of the Council he (Sir Bowen-Jones) remembered with honour and pleasure having served in an active capacity at the Shows and on the Council of the Society during the Presidency of each of the Sovereigns of England since the Society was formed. If His Royal Highness was as energetic as his elder brother, the Prince of Wales, who attended the Show at Cardiff during his (Sir Bowen-Jones's) Presidency, he would give the Honorary Director and the Stewards a very busy time during the next Show. (Laughter and applause.)

His Royal Highness the DUKE OF YORK, K.G., in acknowledging the proposition after it had been put to the meeting and carried with acclamation, said : I thank you, Mr. Adeane and Sir Bowen-Jones, for the very kind way you have moved and seconded my election to the position of President. I hope you will let me say at once how very much I appreciate the great honour which you have conferred upon me in electing me to a position which in the past has been held by such distinguished men, and indeed by members of my own family. I will not pretend that I have more than a very superficial knowledge of the science and art of agriculture. But, as you know, two years ago I was fortunate enough to be present at the Show at Darlington, one of the largest shows of live stock and machinery that has ever been held by the Society. On that occasion I was very greatly impressed, and I think I may claim to have realised how distant are the limits of learning in regard to our most important national industry.

The success of that Show, however, was marred by the unfavourable conditions prevailing at the time, and in consequence the Society was forced to face very grave financial difficulties. It is a matter for extreme gratification, therefore, that the enormous success of this year's Show at Derby has proved that those conditions were merely transitory, and I am both proud and pleased to congratulate the Society upon such a happy reversal of fortune. (Applause.) I am encouraged to believe that with renewed hope and increased confidence we can now go forward in our efforts to advance agriculture and develop the work of the Society. (Hear, hear.) I have already told you that my agricultural knowledge may be small, but I can assure you that my interest and enthusiasm are equally great. (Applause.) I am looking forward with very keen anticipation to the forthcoming Show next year. To visit the Show at any place and under any conditions must always be both a pleasure and a privilege, but

the good fortune which decreed that during my year of office the Show should be held at my own old University town first doubles the pleasure, and, if I may say so, enhances the privilege.

In spite of the depressed position of our oldest industry, as members of this great national society we must see that interest in agriculture is not allowed to wane. (Applause.) I sincerely hope that next year's Show will produce a long list of exhibitors and a very large attendance of the general public. I notice that the prize list has been drawn up with the usual wide and inclusive classification, and in the name of the Society I would express our thanks to the various Breed Societies and the Local Committee for their generous contributions to the prize fund. (Hear, hear.)

In conclusion I am very glad to learn that the membership has increased by over a thousand since last year, and I venture to express the hope that during the coming year of my presidency there may be opportunities of securing a still greater number of members. Once more, gentlemen, I thank you for the great honour you have done me, and with your able assistance and guidance I am confident in the hope that this coming year will go down upon the records as one of the most successful in the history of the Society. May I take this opportunity, my lords and gentlemen, of thanking you for the very kind way you have received me this afternoon.

#### **Election of Trustees.**

The **PRESIDENT** announced that the following twelve trustees had been nominated by the Council in accordance with the by-laws:—

H.R.H. the Prince of Wales, K.G., York House, St. James's Palace, S.W.1.  
C. Adesane, C.B., Babraham Hall, Cambridge.  
The Duke of Bedford, K.G., Woburn Abbey, Bedfordshire.  
Sir J. B. Bowen-Jones, Bart., Council House Court, Shrewsbury.  
Col. F. S. W. Cornwalls, Linton Park, Maidstone, Kent.  
The Duke of Grafton, Croome Court, Severn Vale, Worcestershire.  
The Duke of Devonshire, K.G., Chatsworth, Buxton.  
Sir Gilbert Gresley, Bart., C.V.O., Walton Hall, Warrington.  
Lord Middleton, Hildasell House, Maltby, Yorks.  
The Earl of Northbrook, Stratton, Micheldever, Hampshire.  
The Hon. Cecil T. Parker, The Grove, Corsham, Wiltshire.  
Sir John H. Thorold, Bart., Old Hall, Syston, Grantham.

On a show of hands they were declared re-elected as trustees, to hold office until the next ensuing annual general meeting.

#### **Election of Vice-Presidents.**

The Vice-Presidents were elected in a similar manner, their names being:—

Lord Alwyn, K.C.V.O., K.B.E., Honingham, Norwich.  
C. Colman-Hedges, Shadwell Park, Braintree, Essex.  
Percy Creech-Jones, Sandhills Lodge, Ascot, Berkshire.  
The Earl of Derby, K.G., Lodge, Prussey, Lancashire.  
R. M. Greaves, Wern, Portmadoc, North Wales.  
Ernest Mathews, Little Shurdene, Amersham, Bucks.  
The Duke of Portland, K.G., Welbeck Abbey, Worksop, Notts.  
The Earl of Powis, Powis Castle, Welshpool, Montgomery.  
Frederick Reynard, Sunderlandwick, Driffield, Yorkshire.  
The Duke of Richmond and Gordon, K.G., Goodwood, Chichester.  
Lieut.-Col. E. W. Staniforth, Kirk Hammerton Hall, York.  
The Earl of Yarborough, Brocklesby Park, Lincolnshire.

#### **Election of Auditors.**

On the motion of Mr. J. W. WATT, seconded by Mr. J. HERBERT TAYLOR, it was resolved: "That the best thanks of the Society be tendered to Messrs. Jonas M. Webb, Hubert J. Greenwood and Newell P. Squarey for their services as auditors, and that they be re-elected for the ensuing year."

**Elections to the Council.**

The PRESIDENT reported, in accordance with By-law 87, the names of the following ordinary members of the Council, who had been elected to represent the several divisions of the Society included in Group C in order that the meeting might take cognisance of their election :—

Cumberland : Joseph Harris, Brackenbrough Tower, Carlisle.  
 Westmorland : Lord Henry Bentinck, M.P., Underley Hall, Kirkby Lonsdale.  
 Yorks (E. Riding) : T. L. Wickham Boynton, Burton Agnes Hall.  
 North Wales (two representatives) : Major David Davies, M.P., Broneirion, Llan-  
 dinam ; Major Eric J. W. Platt, Gorddington, Llanfaffrtechan.  
 Lincoln (two representatives) : John Evans, Burton, near Lincoln ; C. W. Tindall,  
 Park House, Louth.  
 Huntingdon : John Bowell, Bury, Huntingdon.  
 Cambridge : J. E. Luddington, Littleport, Ely.  
 Oxford : Robert H. Scott, Merton, Oxford.  
 Kent (two representatives) : T. L. Smith, Boley Hill House, Rochester ; H. Fitz-  
 water Plumtree, Goodnestone, near Canterbury.  
 Warwick : Capt. R. Oliver-Bellasis, Shilton House, Coventry.  
 Gloucester (two representatives) : Lord Bledisloe, K.B.E., Lydney Park ; H. Den-  
 Brocklehurst, Sudeley Castle, Winchcombe.  
 Glamorgan : D. T. Alexander, Brynethen, Dinas Powis.  
 Somerset : Lord Strachie, Sutton Court, Pensford.  
 Berkshire : Sir W. A. Mount, Bart., C.B.E., M.P., Wasing Place, Reading.  
 Sussex (two representatives) : Lieut.-Col. Sir Merrik R. Burrell, Bart., Knepp Castle,  
 Horsham ; Lieut.-Col. G. L. Courtoupe, M.C., M.P., Whiligh.  
 Ireland : Rt. Hon. Frederick Wrench, Killacooona, Ballybrack, Co. Dublin.

Additional representatives on the Council had also been elected under By-law 83 :—

Derbyshire : U. Roland Burke, Chatsworth, Bakewell.  
 Norfolk : Hubert Groom, Sunderland, Docking.

**Members' Suggestions.**

In response to the PRESIDENT's invitation to members to put forward any matters which they wished the Council to consider,

Mr. PARMITER said that the Council might very well consider the encouragement of the young farmer or the farmer's son in the invention of machinery for the farm. He thought the Society should award silver medals on a different basis than at the present time, and he suggested that new machinery should be tested by a board consisting of six farmers and six engineers, so that its merits could be properly considered.

**Thanks to Retiring President.**

The Hon. ALEX. PARKER proposed a vote of thanks to the retiring President, observing that he had known the "Royal" a long time, but did not remember it without Mr. Greaves, who was a regular exhibitor and fully conversant with the needs of the Society. A member of the Council had that day told him that it would have been impossible to have had a better President or a better man to work with than Mr. Greaves.

The proposition having been seconded and heartily carried, The PRESIDENT thanked the meeting very sincerely, and remarked that his year of office would always be a very happy memory. To have been President of that Society was the greatest honour that could have been given to him, and he was grateful to the Society for their invariable kindness and forbearance, as well as to the members of the Council for their great assistance. He had had nothing but kindness from them, and felt that to be President of that Society was to learn how good one's friends were.

The proceedings then terminated.

# Royal Agricultural Society of England.

## AWARDS OF PRIZES AT DERBY, 1921.

### ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize.  
 V., Fifth Prize. R.N., Reserve Number. H.C., Highly Commended.  
 C., Commended.

The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Goats, Sheep, and Pigs, was "bred by Exhibitor."

### HORSES.

#### Shires.

No. in Cata. Class 1.—*Shire Stallions, foaled in 1920.*<sup>1</sup>

[13 entries.]

1 I. (£20.)—J. H. APPLEY & SONS, Stud Farm, Tixall, Stafford, for **Bradgate Viscount**, brown, bred by C. W. Kellock, Highfields, Audlem, Cheshire; *s.* Audlem Royalist 32986, *d.* Audlem Encore 80259 by Eaton Nunusich 27301.

6 II. (£10.)—C. T. HOARE, Bignell Park, Bicester, for **Bignell Recorder**, brown; *s.* Pendley Record 35951, *d.* Fine Feathers 77597 by Babingley Null Secundus 26998.

9 III. (£10.)—ROBERT L. MOND, Combe Bank, near Sevenoaks, for **Viscount Childwick** of Sundridge, bay; *s.* Childwick Champion 22215, *d.* Lady Milner 81945 by Lord Milner 25367.

4 R. M.—E. THOMPSON DONCASTER, Sleaford, Lincs., for **St Leger Champion**, H. C.—3, 12. G.—7.

Class 2.—*Shire Stallions, foaled in 1919.* [20 entries.]

22 I. (£20, & Champion.)—SIR BERNARD GREENWELL, Bt., Marden Park, Woldhampton, Surrey, for **Marden Premier** 37635, bay, bred by the late Sir Walpole Greenwell Bt.; *s.* Champion's Goalkeeper 30296, *d.* Marden Dorina 75212 by Marden Forest King 25534.

20 II. (£10, and R. N. for Champion.)—JAMES GOULD, Cronchley, Lynn, Cheshire, for **Heronty Buscot** 37494, brown, bred by Andrew Devitt, Heronty, East Grinstead; *s.* Champion's Goalkeeper 30296, *d.* Buttington Bluebell 80784 by Kempton Buscot 21565.

30 III. (£5.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for **Leek Fearless** 37593, black; *s.* Leek Dauntless 31583, *d.* Leek Destiny 85505 by Coronation 1th 29263.

27 R. N.—FRED. W. TIBBETSON, Blue Barn Stud, Langwith, Mansfield, for **Barn Monk**, H. C.—19, 23, 32.

Class 3.—*Shire Stallions, foaled in 1918.* [14 entries.]

34 I. (£20.)—J. H. APPLEY & SONS, Stud Farm, Tixall, Stafford, for **Bradgate Champion** 36332, bay, bred by John Halden, Rectory Farm, Checkley, Tean, Stoke-on-Trent; *s.* Leek Dauntless 31583, *d.* Checkley Duchess 84319 by Clayton Nobility 25079.

45 II. (£10.)—THE EARL OF POWIS, Powis Castle, Welshpool, for **Welshpool Ruler** 37051, bay; *s.* Abbotts Royal Blood 31147, *d.* Welshpool Duchess 00902 by Eaton Nunusich 27301.

38 III. (£5.)—WILLIAM J. CUMBER, Theale, Berks, for **Basildon Clansman** 36277, dark brown, bred by Major J. A. Morrison, Basildon Park, Reading; *s.* Champion's Clansman 29221, *d.* Tandridge Choice 72671 by Shamrock of Tandridge 25260.

36 R. N.—J. M. BELCHER, Tibberton Manor, Newport, Salop, for **Tibberton Corrector**, H. C.—41, 42. G.—39, 47.

<sup>1</sup> Prizes given by the Shire Horse Society.

<sup>2</sup> Champion Gold Medal, and £5 to the Reserve given by the Shire Horse Society for the best Stallion in Classes 1 to 3. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Stallion, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

**Class 4.—Shire Fillies, foaled in 1920.<sup>1</sup> [21 entries.]**

53 I. (£20.)—H. W. BISHOP and J. W. MEASURES, Pendley Stock Farms, Tring, for Pendley Romance, bay, bred by Mrs. Nield, Packington, Ashby-de-la-Zouch; *s.* Harboro' Nulli Secundus 33231, *d.* May Birdsall 64388 by Birdsall Monestrel 19337.

62 II. (£10.)—THOMAS JACKSON, Stud Farm, Shireoaks, Birmingham, for Ansty Forest Derby, brown, bred by Mr. Brown, Harborne, Birmingham; *s.* Champion's Counterseal 32213, *d.* Rockey Harrison 98228 by Woodneath 24772.

49 III. (£5.)—H. A. APPLEYER & SONS, Stud Farm, Tixall, Stafford, for Bradgate Sheba, bay; *s.* Pendley Leader 35071, *d.* Clumber Sheba 55862 by Royal Derby 16933.

59 R. N.—G. R. C. POSTER, Ansty Hall, Trumpington, Cambridge, for Torrells Princess Rose, bay, bred by J. Carson, Torrells Hall, Willingale, Ongar, Essex; *s.* Crossmoor Prince Forester 38558, *d.* Harlow Rose 93476 by Coleshill Forester 24149. H. C.—18. C.—56, 63, 65, 66.

**Class 5.—Shire Fillies, foaled in 1919. [13 entries.]**

79 I. (£20.)—ROBERT L. MOND, Combe Bank, near Sevenoaks, for Princess Chilwick of Sandridge 105084, bay; *s.* Chilwick Champion 22215, *d.* Farewell Tolworth 81346 by King of Tandridge 24351.

75 II. (£10.)—SIR BERNARD GREENWELL, Pt., Marden Park, Woldingham, Surrey, for Chatley Finn 102161, bay, bred by J. and W. Bourne, Norton St. Philip, Bath; *s.* Marden Peter 33856, *d.* Chatley Queen 84308 by King Cole 7th 26351.

72 III. (£5.)—A. H. CLARK & SON, Moulton Easgate, Spalding, for Moulton Fantasy 104651, bay; *s.* King's Messenger 31562, *d.* Moulton Victor's Last 89631 by Moulton Victor King 28590.

73 R. N.—GEORGE COTTERILL, Fenny Compton, Leamington, for Fenny Clansman's Girl. H. C.—74, 78. C.—69, 70, 77, 80.

**Class 6.—Shire Fillies, foaled in 1918. [9 entries.]**

88 I. (£20. & Champion<sup>2</sup>)—SIR ARTHUR NICHOLSON, Highfield Hall, Leck, for Leek Queen 98320, bay; *s.* Champion's Clansman 20221, *d.* Roycroft Forest Queen 75832 by Ratcliffe Forest King 23622.

88 II. (£10.)—SIR EDWARD D. STEPHEN, Fan Court, Chertsey, Surrey, for Pendley Princess 4th 99358, bay, bred by J. G. Williams, Pendley Manor, Tring; *s.* Norbury Monestrel 23534, *d.* Bardon Forest Princess 55968 by Lockinge Forest King 18867.

84 III. (£5.)—H. R. KING, Poles, Ware, Herts., for Burghfield Glitter 97312, bay, bred by Job Lousley, Green Farm, Burghfield, Reading; *s.* Theale Monestrel 34580, *d.* Gold Shell 81533 by Champion's Clansman 29221.

83 R. N.—CHARLES DUNN, Avon Lodge, Long Lawford, Rugby, for Pendley Woodlark. H. C.—82. C.—85, 88.

**Class 7.—Shire Mares, foaled in or after 1917 (with Foals at foot). [4 entries.]**

93 I. (£20.)—OWEN WILLIAMS, Crossways, Cowbridge, Glam., for Crossways Forest Maid 102484, bay, foaled in 1918, bred by F. Farnsworth & Sons, Shawsell, Cirencester; *s.* Faria Flick 31147, *d.* Brockhall Primrose 47333 by Lockinge Forest King 18867. [Foal by Horbury Goatkeeper 37496.]

92 II. (£10.)—G. R. C. FOSTER, Ansty Hall, Trumpington, Cambridge, for Lincoln Duchess 94096, bay, foaled in 1917, bred by E. T. Rutter, Salmonby, Horncastle, Lincs.; *s.* Ashenden King 81165, *d.* Daisy by Financier King 25198. [Foal by King Norbury 35761.]

90 III. (£5.)—J. H. APPLEYER & SONS, Stud Farm, Tixall, Stafford, for Bradgate Betty 91841, bay, foaled in 1917, bred by H. John Appleby, Tixall, Stafford; *s.* Bradgate Victor King 32160, *d.* Bradgate Diana 56363 by Ivy Forest Chief 23390. [Foal by Ash Champion 23390.]

**Class 8.—Shire Mares, foaled in or before 1916 (with Foals at foot). [19 entries.]**

107 I. (£20. & R. N. for Champion<sup>3</sup>)—SIR BERKELEY SHEFFIELD, Br., Stud Farm, Tickhill, Yorks, for Clippenhurst Moneta 73942, bay, foaled in 1912; *s.* King Ernest W. Headington, Clippenhurst Court, Slough; *d.* Dowsby Forest 27238, *s.* Clippenhurst Mitchell 59817 by Norbury Monestrel 23543. [Foal by Norman by Ulster King 32672.]

96 II. (£10.)—R. W. CAREY, Colly Farm, Brinsford, Northants, for Halstead Royal Duchess 65833, bay, foaled in 1904, bred by late John Bradley, Halstead House, Tilton, Leicestershire; *s.* Lode Forest King 18867, *d.* Halstead Duchess 3rd 42121 by Monestrel 14180. [Foal by Pendley Goatkeeper 37729.]

101 III. (£5.)—G. R. C. FOSTER, Ansty Hall, Trumpington, Cambridge, for Claypole Dray Queen 80920, brown, foaled in 1914, bred by L. Atkinson, Postland, Peterborough; *s.* Godby Drayman 27367, *d.* Thrapston Empress 72732 by Gaer Conqueror 25218. [Foal by King Norbury 35761.]

99 R. N.—MAJOR DAVID DAVIES, M.P., Bronciran, Llandinam, Montgomery, for Gleathope Selection. H. C.—108. C.—105.

<sup>1</sup> Prizes given by the Shire Horse Society.<sup>2</sup> Champion Gold Medal, and £5 to the Reserve, given by the Shire Horse Society for the best Mare or Filly in Classes 4 to 8. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Mare or Filly, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

**Class 9.—Shire Colt Foals, the produce of Mares entered in Class 7 or 8.<sup>1</sup>** [8 entries.]

117 I. (210.)—G. R. C. FOSTER, Anstey Hall, Trumpington, Cambridge, for brown, foaled April 10; s. King Norbury 35781, d. Lincoln Duchess 01498 by Ashenden King 31165.  
 118 I. (25.)—J. H. APPERLY & SONS, Stud Farm, Tirrell, Stafford, for bay, foaled March 2; s. Ash Champion 33682, d. Bradgate Betty 01841 by Bradgate Victor King 32150.  
 119 I. (33.)—OWEN WILLIAMS, Crossways, Cowbridge, Glam., for bay, foaled May 15; s. Heronry Goukkeeper 37496, d. Crossways Forest Maid 102484 by Friar Tuck 4th 31447.  
 120 R. N.—MAJOR DAVID DAVIES, M.P., Broneirion, Llanddham, Montgomery.

**Class 10.—Shire Filly Foals, the produce of Mares entered in Class 7 or 8.<sup>1</sup>** [12 entries.]

121 I. (610.)—SIR BERKELEY SHEFFIELD, Br. Stud, Tickhill, Yorks, for bay, foaled February 4; s. Normanby Briar King 38272, d. Cippenham Monica 73942 by Dowsby Forest King 27283.  
 122 II. (55.)—EGERTON ORME, Hatton Hall, Derby, for Ash Sunshine, bay, foaled March 14; s. Norbury Monestrel 23543, d. Babingley Sunshine 76721 by Calwich Blend 17226.  
 123 III. (23.)—G. R. C. FOSTER, Anstey Hall, Trumpington, Cambridge, for bay, foaled May 15; s. King Norbury 35781, d. Claypole Dray Queen 80920 by Goudby Drayton 27367.  
 124 R. N.—T. H. TONGE, Rowdale, Ashford, Derbyshire, for Rowdale Royal.

**Class 11.—Shire Gelding (by registered sire) foaled in or before 1918.<sup>1</sup>** [4 entries.]

133 I. (220.)—EDWARD DAVIES, The Walks, Partington, Manchester, for Fashion, bay, foaled in 1917; s. John Shipton, Sen., Newton Farm, Adlington, Cheshire; d. Shipton Contractor 30657, d. Matchless Bonny 67809 by Duxford Matchless 26107.  
 135 II. (510.)—NATHANAEL HOCKEN, Kilkenny, Bilsbury, Fairford, Glos., for Major, chestnut, foaled in 1918, bred by E. Thompson, Duxford, Silk Willoughby, Sleaford; s. Magna Coming King 33350.  
 132 III. (65.)—W. E. COX, Elmton Park, Chesterfield, for Elinton Prince, bay, foaled in 1917, bred by Matthew Hubbard, Ivy House, Eaton, Grantham; s. Royal Commander 30851.  
 134 R. N.—NATHANAEL HOCKEN for Captain.

**Clydesdales.**

**Class 12.—Clydesdale Stallions, foaled in 1920.<sup>2</sup>** [5 entries.]

136 I. (220.)—GEORGE A. FERGUSON, Northern Stud, Elgin, for Merridale, bay, bred by Robert Jackson, West Bank, Macmerry; s. Phillipine 18044, d. Likovana 48080 by Tallyman 17530.  
 137 II. (410.)—JAMES KILPATRICK, JUN., Hawkrigg House, Wigton, Cumberland, for Hawkrigg Evergreen, bay, bred by Dr. Kelso, Broxburn; s. Bonnie Buchlyvie 14032, d. Lady Allandale 45320 by Allandale 12418.  
 138 III. (25.)—JAMES KILPATRICK, Craigie Mains, Kilmarnock, for bay, bred by Thomas White, Eastertown, Douglas Water; s. Bonnie Buchlyvie 14032, d. Eastertown Rosebud 51613 by The Dunure 16839.  
 139 R. N.—A. M. MONTGOMERY, Netherhall, Castle Douglas, for Krishna.

**Class 13.—Clydesdale Stallions, foaled in 1919.** [7 entries.]

147 I. (220. & Champion<sup>3</sup>)—A. M. MONTGOMERY, Netherhall, Castle Douglas, for Tristan 20178, bay, bred by James B. Boyd, Bishoppton, Bayone, Insch; s. Hiawatha Again 18765, d. Daisy of Bishopton 44716 by Bouhan Chief 15757.  
 148 II. (210. & R. N. for Champion<sup>3</sup>)—JAMES GRAY, Birkenwood, Kilpenn Station, for Vix 20481, brown; s. Botha 19026, d. Meta 45325 by Apukwa 14567.  
 143 III. (25.)—GEORGE A. FERGUSON, Northern Stud, Elgin, for Silverdale 20452, black, bred by Dickens and Butler, Carnforth; s. Phillipine 18044, d. Rosalind 45029 by Dunure Footprint 15203.  
 146 R. N.—JAMES KILPATRICK, JUN., Hawkrigg House, Wigton, for Craigie Real Mackay.

**Class 14.—Clydesdale Stallions, foaled in 1918.** [2 entries.]

149 I. (220.)—A. M. MONTGOMERY, Netherhall, Castle Douglas, for Dunraven 20309, bay, bred by James M. Thompson, Auchenheath, Maybole; s. Dunure Footprint 15203, d. Dyroch Queen 36565 by Blyth Thomas 12268.

**Class 15.—Clydesdale Stallions, foaled in or before 1917.<sup>3</sup>** (4 entries.)

152 I. (220.)—GEORGE A. FERGUSON, Northern Stud, Elgin, for Victor Dale 18148, brown, foaled in 1912, bred by David R. Crauf, Ardmore, Edderton; s. Pride of Bacon 10587, d. Millicent 26261 by Sir Hugo 10924.  
 150 II. (610.)—CHARLES AITKENHEAD, Carr House Farm, New Seaham, co. Durham, for Crookston 19395, roan, foaled in 1916, bred by Sir John Stirling Maxwell, Bt., Pollock Castle, Pollockshaws; s. Dunure Footprint 15203, d. Lady Christian 35961 by Hiawatha 1067.

<sup>1</sup> Prizes given by the Shire Horse Society.

<sup>2</sup> Prizes given by the Clydesdale Horse Society.

<sup>3</sup> Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 12-15.

151 III. (£5).—SIR JAMES BELL, Bellfield, Willerby, Hull, for Count Footprint 19678, bay, foaled in 1916, bred by Norman P. Donaldson, Lettre Cottage, Dunmoyne; *s.* Dunure Footprint 15203, *d.* Gartly Heritage 37277 by Everlasting 11331.

**Class 16.—Clydesdale Fillies, foaled in 1920.<sup>1</sup> [7 entries.]**

158 I. (£20).—ALEXANDER MURDOCH, East Hallside, Hallside, Glasgow, for Ophelia, black, foaled by Alexander Maxwell, Warrix, Irvine; *s.* Craigie Liligant 19071, *d.* Warrix Gipsy Maid 50894 by Dunure Footprint 15203.

159 II. (£10).—H. E. ROBERTS, Monk Castle, Southwiate, Carlisle, for Monk Gladys, bay; *s.* Auchencloower 12007, *d.* Galaxy 48866 by Dunure Footprint 15203.

154 III. (£5).—DAVID ADAMS, Auchencraig, Dumbarston, for Kate, bay; *s.* Dunure Expression 19103, *d.* Alice by Baron Dollar 15133.

157 R. N.—JAMES KILPATRICK, Craigie Mains, Kilmarnock, for Craigie Fairmaid. H. C.—155.

**Class 17.—Clydesdale Fillies, foaled in 1919. [10 entries.]**

166 I. (£20, & Champion,<sup>2</sup>).—ROBERT MARSHALL, The Mains of Kilmarnock, by Alexandria, N.B., for Farleton Bell, bay, foaled by G. Burford, *d.* J. F. Dickens, Carnforth; *s.* Dunure Footprint 15203, *d.* Dunure Voice 3671 by Ayrshire 14567.

167 II. (£10).—ROBERT MARSHALL, for Parkhall Perfect Lady, dark brown, foaled by Robert Young, Parkhall, Polmont; *s.* Royal Favourite 10630, *d.* Parkhall Lady Footprint 44434 by Dunure Footprint 15203.

164 III. (£5).—J. E. KERR, Harviestoun Castle, Dollar, N.B., for Harviestoun Fairy, bay; *s.* Dunure Footprint 15203, *d.* Harviestoun Floraline 45585 by Royal Favourite 10630.

162 R. N.—HENRY DODINSON & SON, Holsington Laithes, Kendal, for Farleton Alice. H. C.—155.

**Class 18.—Clydesdale Fillies, foaled in 1918. [8 entries.]**

173 I. (£20, & R. N. for Champion,<sup>3</sup>).—J. E. KERR, Harviestoun Castle, Dollar, N.B., for Harviestoun Felicia, bay; *s.* Dunure Footprint 15203, *d.* Harviestoun Floraline 45585 by Royal Favourite 10630.

175 II. (£10).—DOUGLAS D. MURRAY, The Dene, Seaham Harbour, for Seaham Ideal, brown; *s.* Auchencloower 12007, *d.* Bent Baroness 24095 by Baron of Buchlyvie 11263.

**Class 20.—Clydesdale Geldings (by registered sires), foaled in or before 1918.<sup>4</sup> [17 entries.]**

196 I. (£20).—SCOTTISH CO-OPERATIVE WHOLESALE SOCIETY, 95, Morrison Street, Glasgow, for Top Line, chestnut, foaled in 1917, bred by William Stewart, Fardle, Melkshiem; *s.* Dunure Footline 18333.

194 II. (£10).—SCOTTISH CO-OPERATIVE WHOLESALE SOCIETY, for Bob, dark brown, foaled in 1916, bred by Mr. Forsyth, New Smailholm, Kelso; *s.* Arngibben 17726.

198 III. (£5).—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, for Billy, bay, foaled in 1917, bred by Neil McLean, Breda, Alford, Aberdeenshire; *s.* Auchencloower 12007.

189 R. N.—DOUGLAS D. MURRAY, The Dene, Seaham Harbour, for Dandy. H. C.—193. C.—192.

## Suffolks.

**Class 21.—Suffolk Stallions, foaled in 1920.<sup>5</sup> [5 entries.]**

198 I. (£20).—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Gala 5153, *s.* Morston Chieftain 4529, *d.* Easton Prima Donna 8631 by Sudbourne Peter 3955.

201 II. (£10).—JOSEPH WATSON, Sudbourne Hall, Oxford, Suffolk, for Culpeper Chieftain 5151, bred by G. P. Watson, Culpho Hall, Ipswich; *s.* Sudbourne Beaufighter 4215, *d.* Sunshine Moors 5542 by Johnstone's Sunshine 2734.

199 III. (£5).—CARLYLE SMITH, Sutton Hall, Woodbridge, for Ashmoor Prospect 5234, bred by C. J. Freeman, Aspall, Stowmarket; *s.* Kenton Peter 4555, *d.* Dorothy 6364 by Rendlesham P.S. 3343.

200 R. N.—E. S. TOMLINSON, North Rauceby, Sleaford, for Rauceby Pip Pip.

**Class 22.—Suffolk Stallions, foaled in 1919. [9 entries.]**

210 I. (£20, & Champion,<sup>6</sup>).—JOSEPH WATSON, Sudbourne Hall, Oxford, Suffolk, for Sudbourne Premier 4963; *s.* Sudbourne Beau Brocade 4233, *d.* Sudbourne Moonlight 8623 by Sudbourne Peter 3955.

203 II. (£10).—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Guardsman 4946; *s.* Morston Gold Guard 4234, *d.* Easton Prima Donna 8631 by Sudbourne Peter 3955.

<sup>1</sup> Prizes given by the Clydesdale Horse Society.

<sup>2</sup> Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 16-19.

<sup>3</sup> Prizes given by the Suffolk Horse Society.

<sup>4</sup> The "Corporation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 21-24.

202 **III. (25.)**—**JAMES FORREST**, Tattingstone Hall, Ipswich, for **Tattingstone Rebel** 4928; *s.* Sudbourne Beauchief 4215, *d.* Glaner 6219 *by* Bawdsey Harvester 3076.  
 205 **R. M.—A. PRESTON JONES**, Mickleover House, Derby, for **Mickleover Prefect**.  
 H. C.—209. C.—206.

**Class 23.—Suffolk Stallions, foaled in 1918.** [8 entries.]

211 **I. (£20.)**—**ANTHONY T. PRATT**, Morston Hall, Trimley, Ipswich, for **Judex** 4971, bred by W. H. Allen, Harkstead Hall, Suffolk; *s.* Woolverston Monarch 4286, *d.* Matchett 2nd 6347 *by* Berners Neptune 3005.  
 213 **II. (£10.)**—**SIR CUTHBERT QUILTER**, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Property** 4839; *s.* Bawdsey Varlet 4390, *d.* Bawdsey Prosprine 3651 *by* Smith's Saturn 2653.  
 217 **III. (25.)**—**COLONEL THE EARL OF STRADBROKE**, Henham, Wangford, Suffolk, for **Henham Dreadnought** 4901; *s.* Henham Acroite 4343, *d.* Matchett 3919 *by* Cook's Border Minstrel 2287.  
 214 **R. N.—SIR CUTHBERT QUILTER, Bt.**, for **Framlingham Allenby**.

**Class 24.—Suffolk Stallions, foaled in or before 1917.<sup>1</sup>** [5 entries.]

223 **I. (£20. & R. N. for Champion<sup>2</sup>)**—**JOSEPH WATSON**, Sudbourne Hall, Orford, Suffolk, for Sudbourne Beau Brocade 4235, foaled in 1913, bred by Kenneth M. Clark, late of Sudbourne Hall, Orford; *s.* Sudbourne Beau-monde 3598, *d.* Sudbourne Tilley 6662 *by* Sudbourne Arab 3287.  
 220 **II. (£10.)**—**A. PRESTON JONES**, Mickleover House, Derby, for **Freston Kedive** 4486, foaled in 1915, bred by John Sherwood, Ipswich; *s.* Sudbourne Arabi 3287, *d.* Ruby 7341 *by* Sproxton Gold King 3347.  
 219 **III. (£5.)**—**THE MARQUIS OF GRAHAM**, Easton Park, Wickham Market, for **Sudbourne Artemas** 4573, foaled in 1916, bred by Kenneth M. Clark, Sudbourne Hall, Orford, Suffolk; *s.* Sudbourne Arabi 3287, *d.* Sudbourne Queen of Hearts 5507 *by* Sudbourne Brownie 2886.

**Class 25.—Suffolk Fillies, foaled in 1920.<sup>1</sup>** [7 entries.]

226 **I. (£20.)**—**A. CARLYLE SMITH**, Sutton Hall, Woodbridge, for **Ashmoor Acornite** 10922; *s.* Bawdsey Hay 4188, *d.* Ashmoor Anemone 8903 *by* Sudbourne Arab 3309.  
 227 **II. (£10.)**—**A. CARLYLE SMITH**, for **Ashmoor Vesta** 1026; *s.* Sudbourne Arab 3309, *d.* Violet 5082 *by* Cook's Ironside 2750.  
 230 **III. (25.)**—**A. GEORGE WELCH**, Worlingham, Beccles, Suffolk, for **Sudbourne Aura** 10862, bred by Joseph Watson, Sudbourne Hall, Orford; *s.* Sudbourne Beau Brocade 4235, *d.* Sudbourne Armoda 8516 *by* Sudbourne Peter 3355.  
 225 **R. N.—COLONEL THE EARL OF STRADBROKE**, Henham, Wangford, Suffolk, for **Henham Fashion**.

**Class 26.—Suffolk Fillies, foaled in 1919.** [7 entries.]

236 **I. (£20. & R. N. for Champion<sup>3</sup>)**—**A. CARLYLE SMITH**, Sutton Hall, Woodbridge, for **Ashmoor Besie** 10367; *s.* Sudbourne Arab 3309, *d.* Ashmoor Belle *by* Taylor's Majestic 3327.  
 237 **II. (£10.)**—**A. GEORGE WELCH**, Worlingham, Beccles, Suffolk, for **Worlingham Star** 10431; *s.* Sudbourne Beau-Brocade 4235, *d.* Sudbourne Moggy 6744 *by* Dennington Cup-beard 3088.  
 238 **III. (25.)**—**SIR CUTHBERT QUILTER**, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Scotia** 10397; *s.* Earl Gray 4219, *d.* Cliff Scott 6207 *by* Bawdsey Harvester 3076.  
 234 **R. N.—SIR CUTHBERT QUILTER, Bt.**, for **Bawdsey Porcelain**.

**Class 27.—Suffolk Fillies, foaled in 1918.** [9 entries.]

245 **I. (£20.)**—**JOSEPH WATSON**, Sudbourne Hall, Orford, Suffolk, for **Mignonette** 9726, bred by Ernest H. Williams, Alderton, Woodbridge; *s.* Sudbourne Arab 3309, *d.* Merry Thought 6941 *by* Bawdsey Harvester 3076.  
 241 **II. (£10.)**—**ARTHUR T. PRATT**, Morston Hall, Trimley, Ipswich, for **Morston Danese** 9941; *s.* Morston Gold Guard 4234, *d.* Smart 7131 *by* Rendlesham Goldsmith 3095.  
 244 **III. (£5.)**—**SIR CUTHBERT QUILTER**, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Queen** 9813; *s.* Bawdsey Hay 4183, *d.* Bawdsey Chieftainess 7433 *by* Bawdsey Laddie 3637.  
 248 **R. N.—SIR CUTHBERT QUILTER, Bt.**, for **Bawdsey Ghast**.  
 H. C.—242, 246. C.—238.

**Class 28.—Suffolk Mares, with Foals at foot.** [12 entries.]

257 **I. (£20. & Champion<sup>4</sup>)**—**JOSEPH WATSON**, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Moonlight** 8623, foaled in 1915, bred by Kenneth M. Clark, Sudbourne Hall; *s.* Sudbourne Peter 3355, *d.* Sudbourne Twilight 7219 *by* Sudbourne Arabi 3287. [Foal by Sudbourne Beau Brocade 4235.]

<sup>1</sup> Prizes given by the Suffolk Horse Society.

<sup>2</sup> The "Corporation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 21-24.

<sup>3</sup> Champion Prize of £10 given by the Suffolk Horse Society for the best Mare or Filly in Classes 25-28.

256 1L. (\$10.)—JOSEPH WATSON, for Sudbourne Armada 8519, foaled in 1915, bred by Kenneth M. Clark, Sudbourne Hall ; s. Sudbourne Peter 2958, d. Sudbourne Arabella 5472 by Smith's Woodstock 1745. [Foal by Sudbourne Bell Brocade 4235.]

254 1L. (\$10.)—SIR CUTHBERT QUILLER, for Bawdsey Manor, Woodbridge, for Bawdsey Maud Marion 9508, foaled in 1917; s. Bawdsey Hay 4188, d. Bawdsey Mary 4010 by Prince Wedgewood 2384. [Foal by Earl Gray 4210.]

255 R. N.—A. CAREY SMITH, Sutton Hall, Woodbridge, for Ashmoor Anemone. H. C.—249. C.—250, 251.

**Class 29.—Suffolk Colt or Filly Foals, produce of Mares in Class 28.<sup>1</sup>** [9 entries.]

260 1L. (\$10.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for colt, foaled January 5; s. Morsion Cider Cup 4520, d. Easton Arabian 8612 by Sudbourne Arab 3273.

264 1L. (\$5.)—JOSEPH SMITH, Sutton Hall, Oxford, Suffolk, for filly, foaled April 25; s. Sudbourne Bear Brocade 4235, d. Sudbourne Moonlight 9223 by Sudbourne Peter 3953.

265 III. (\$3.)—CARLYLE SMITH, Sutton Hall, Woodbridge, for filly, foaled March 8; s. Bawdsey Hay 4188, d. Ashmoor Anemone 8903 by Sudbourne Arab 3309.

267 R. N.—JOSEPH WATSON, for filly.

H. C.—263.

**Class 30.—Suffolk Geldings (by registered sires) foaled in or before 1918.<sup>2</sup>** [1 entry.]

268 1L. (\$20.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Captain, foaled in 1916, bred by Sir Cuthbert Quiller, Bt., Bawdsey Manor, Woodbridge; s. Bawdsey Hay 4188.

**Percherons.**

**Class 31.—Percheron Stallions, foaled in 1920.** [5 entries.]

269 1L. (\$20.)—JOHN CHIVVERS, Estate Office, Histon, Cambridge, for Histon Drayman B 96, light grey; s. Quenouillet B 31, d. Pailette B 180 by Latin B 100016.

271 1L. (\$10.)—MAJOR DAVID DAVIDSON, P., Bronerion, Llandudno, Mont., for Diam Blou 78, blue grey; s. Presle F 120226, d. Native B 117539 by Jorat B 85748.

273 III. (\$3.)—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for Brampton Darling B 88, grey; s. Ombrion B 73, d. Noctis B 15 by Jean-Bapt B 86379.

272 R. N.—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morell, Warwick, for Greyling Utility. H. C.—270.

**Class 32.—Percheron Stallions, foaled in or before 1919.<sup>3</sup>** [10 entries.]

275 1L. (\$20. & Champion)—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morell, Warwick, for Rhum B 53, grey, foaled in 1917, bred by M. Chopin, La Bigottiere, Clermont, Morlaque, France; s. Lager F 106512, d. Mazurka F 105941 by Huchot F 77760.

281 II. (\$10. & R. N. for Champion)—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for Lager B 1, grey, foaled in 1911, bred by M. Chappelle, Origny-ex-Rou, Orne, France; s. Huchot 77760, d. Gogrette 87589 by Amela.

279 III. (\$5.)—HENRY OVERMAN, Kipton House, Weasenham, Norfolk, for Misanthrope B 5, grey, foaled in 1912, bred by M. Bourlier, St. Martin d'Eaublair Leigh, Montagne l'Orne, France; s. Dognet-ex-Sapoux F 60041, d. Dantone F 60322 by Rival 6065.

277 R. N.—EVERTON STUD, Kitbrook, Moreton-in-Marsh, for Quantaleux. H. C.—274, 283.

**Class 33.—Percheron Fillies, foaled in 1920.** [2 entries.]

285 I. (\$20.)—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for Brampton Diana B 273, grey; s. Misanthrope B 5, d. Quartellette B 19 by Simon F 98910.

284 II. (\$10.)—MRS. ROBERT EMMET, Moreton Paddox, Morston Morell, Warwick, for Greyling Uline B 238, grey; s. Noctis B 4, d. Malaria B 10 by Ingel 79374.

**Class 34.—Percheron Fillies, foaled in 1918 or 1919.<sup>4</sup>** [8 entries.]

283 I. (\$20.)—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for Brampton Caroline B 95, dark grey, foaled in 1919; s. Ombrion B 15, d. Irene B 23 by Clunay F 64207.

288 II. (\$10.)—THOMAS COOK, Hobland House, Bradwell, Great Yarmouth, for Sonoris 843, grey, foaled in 1918, bred in France; s. Ohio F 119732, d. Identite F 79702 by Consent F 62968.

290 III. (\$5.)—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morell, Warwick, for Tremble B 380, grey, foaled in 1919, bred by M. Guet, Tremblay-des-Etilles, Etilleme, Nogent-le-Rotrou, Orne F 119732, d. Ligne F 99348 by Halophile F 75443.

286 R. N.—MAJOR C. P. ACKEES, Hunsley Manor, Gloucester, for Smaltinge. H. C.—287, 291, 292.

<sup>1</sup> Prizes given by the Suffolk Horse Society.

<sup>2</sup> Prizes given by the British Percheron Horse Society.

<sup>3</sup> Challenge Cup value Fifty Guineas given by the British Percheron Horse Society for the st Percheron Stallion in Classes 31 and 32.

**Class 35.—Percheron Mares, with Foals at foot.** [17 entries.]

301 I. (£20, & Champion<sup>1</sup>)—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for Messaline B 211, grey, foaled in 1912, bred by M. Demange, Blavette, Mortague, France; *s.* Douvrenex-Couvereur F 58335, *d.* Paquerette F 87642 by Voltigeur 44388. [Foal by Rhum B 63.]  
 297 II. (£10, & R. N. for Champion<sup>1</sup>)—JOHN CHIVERS, Estate Office, Histon, Cambridge, for Perle B 178, light grey, foaled in 1915; *s.* Japon F 84819, *d.* Chimique F 94306 by Arthur F 84309. [Foal by Misanthrope B 51.]  
 304 III. (£10.)—E. GUY FENWICK, North Luffenham Hall, Stamford, for Helen B 137, grey, foaled in 1916, bred by Clarence McDowell, Cedar, Iowa, U.S.A.; *s.* Square 08560, *d.* Boude Belle 98441 by Blackstone 2nd 54518. [Foal by Misanthrope B 51.]  
 296 R. N.—LT-COL SIR MERRIK R. BURRELL, BT., C.B.E., Knapp Castle, West Grinstead, for Orgere, H. C.—294, 298.

**Class 36.—Percheron Colt or Filly Foals, produce of Mares in Class 35.<sup>2</sup>** [17 entries.]

314 I. (£15.)—JOHN CHIVERS, Estate Office, Histon, Cambridge, for Histon Misanthrope 2nd, dark grey colt, foaled March 25; *s.* Misanthrope 5, *d.* Perle by Japon F 84819.  
 321 II. (£10.)—E. GUY FENWICK, North Luffenham Hall, Stamford, for grey filly, foaled April 8; *s.* Misanthrope B 5, *d.* Helen B 137 by Igman 63856.  
 313 III. (£5.)—LT-COL SIR MERRIK R. BURRELL, BT., Knapp Castle, West Grinstead, for Knapp Victoria, grey filly, foaled March 21; *s.* Omer 87, *d.* Orgere 31 by Douvrenex-Couvereur F 58335.

**Hunters.**

**Class 37.—Hunter Colts or Geldings, foaled in 1920.** [5 entries.]

323 I. (£20.)—LORD MIDDLETON, Birdsall House, Malton, for chestnut gelding; *s.* Sir Harry, 1919, by Cardigan.  
 330 II. (£10.)—MRS. RICHARD D. STERN, Fan Court, Chertsey, for Rawley, dark brown gelding; *s.* General Villa, *d.* Brunette.  
 331 III. (£5.)—MAJOR E. M. WATTS, M.C., Eastwood Park, Falfield, Glos., for Schooner, bay colt; *s.* Histon, *d.* Brig.  
 332 R. N.—MAJOR E. M. WATTS, M.C., for Sherd Khan.

**Class 38.—Hunter Geldings, foaled in 1919.** [5 entries.]

336 I. (£20.)—CAPTAIN W. COUGHL, Flaxley Lodge, Selby, Yorks, for Rufus 6th (supp. No. 505), chestnut; *s.* Ethelbruce, *d.* Dolly.  
 334 II. (£10.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for Hartshorn, bay or brown; *s.* Crathorne, *d.* Heather 3rd 4106 by Scotch Sign (Vol. 21, p. 497 G.S.B.).  
 335 III. (£5.)—MISS M. A. BULLOWS, Edgbaston Riding School, Barlows Road, Edgbaston, Birmingham, for Stet, bay, bred by William Vizard, Hayesdon, Tonbridge, Kent; *s.* Stortford 143, *d.* Windfuhr 1548 by Hanover Square.

**Class 39.—Hunter Geldings, foaled in 1918.** [7 entries.]

338 I. (£20.)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for Whitehorn, chestnut; *s.* Crathorne, *d.* Whinflower 2801 by The Hero (Vol. 18 p. 83, G.S.B.).  
 340 II. (£10.)—MRS. R. COTTRILL, Sandal Lodge, Droitwich, for Roll Call (supp. No. 514), chestnut.  
 341 III. (£5.)—LORD MIDDLETON, Birdsall House, Malton, for brown; *s.* Crathorne, *d.* Belinda by Hindley.  
 343 R. N.—C. J. PHILLIPS, Old Dalby Hall, Melton Mowbray, for Nugget.

**Class 40.—Hunter Fillies, foaled in 1920.** [8 entries.]

345 I. (£20, & R. N. for Champion<sup>3</sup>)—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for Haleyon 5870, chestnut; *s.* Peashaw (Vol. 21, p. 388, G.S.B.), *d.* Heather 3rd 4106 by Scotch Sign (Vol. 21, p. 497, G.S.B.).  
 346 II. (£10.)—ARTHUR S. BOWLEY, Gilston Park, Harlow, for Darigal's Darling 5882, chestnut; *s.* Darigal (Vol. 22, p. 404), *d.* Grace Darling 3rd 4098.  
 347 III. (£5.)—THE BUXTON LIME FIRMS CO., LTD., Royal Exchange, Buxton, for Lime-stone Maid, bay; *s.* Carnation, *d.* Polly.  
 349 R. N.—GEORGE DICKINSON, Carl Mills, Cark-in-Cartmel, Lancs, for Cark Courtmaid.

**Class 41.—Hunter Fillies, foaled in 1919.** [5 entries.]

353 I. (£20, & Champion<sup>3</sup>)—ARTHUR S. BOWLEY, Gilston Park, Harlow, for Lady Grace 3rd 5759, chestnut; *s.* Darigal (Vol. 22, p. 404), *d.* Grace Darling 3rd 4098.

<sup>1</sup> Challenge Cup value Fifty Guineas given by the British Percheron Horse Society for the best Percheron Mare and Filly in Classes 33-35.

<sup>2</sup> Prizes given by the British Percheron Horse Society.

<sup>3</sup> Champion Gold Medal given by the Horses' Improvement and National Light Horse Breeding Society for the best Filly not exceeding three years old in Classes 40-42, which must be registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

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357 II. (£10.)—MAJOR J. L. NICKISSON, Hinton Manor, Swindon, for *Algrete* 5645, chestnut; *s.* Aiglon (Vol. 22, p. 134, G.S.B.), *d.* Sister Anne 3723 by Pantomime (Vol. 17, p. 699, G.S.B.).  
 358 III. (£5.)—CAPT. E. W. GOLDSWORTHY, Yaldham Manor, Kemsing, Sevenoaks, for *Primrose* 5651, chestnut; *s.* Stortford 145, *d.* Pearl 2nd 3996 by Battlement (Vol. 19, p. 294).

**Class 42.—Hunter Fillies, foaled in 1918. [5 entries.]**

360 I. (£20.)—THOMAS MIDDLETON, Little Chester Farm, Derby, for *Seabreeze* 2nd 5820, chestnut; *s.* Tidal Wave (Vol. 22, p. 876, G.S.B.), *d.* Miss Brock 4155 by Chatsworth (Vol. 20, p. 543).  
 358 II. (£10.)—SHIRLEY H. JENKS, Pliason Manor Farm, Whitchurch, Canonorum, Dorset, for *Cark Silver Pheasant* 5725, chestnut, bred by George Dickinson, Cark Mills, Cark-in-Cartmel; *s.* Silver Grill (Vol. 22, p. 800), *d.* Cark Columbine 5337 by Underbird (Vol. 20, p. 118, G.S.B.).  
 362 III. (£5.)—MAJOR E. M. WATTS, M.C., Eastwood Park, Falfield, Glos., for *Flamelet* 5681, chestnut, bred by Moffat S. Thomson, Spotsmains, Kelso, Roxburghshire; *s.* Huntly Gowk 186, *d.* Pyjamas 5320 by Pantomime (Vol. 17, p. 697).

**Class 43.—Hunter Mares (Novice), with Foals at foot.<sup>1</sup> [7 entries.]**

364 I. (£20. & R. N. for Champion.<sup>2</sup>)—LT.-COL. STR. MERRIK R. BURRELL, BT., Knapp Castle, West Grinstead, for *The Belle* 5330, bay, foaled in 1918; *s.* Hanover Square (Vol. 21, p. 700, G.S.B.), *d.* Surprise 3014 by Silver King 54. [Foal by The Best 147.]  
 368 II. (£10.)—WARRE & UNWIN, Longton Hall, Tewkesbury, for *Patricia* 4th 5278, chestnut, foaled in 1915, bred by J. Norbury, Heachside, Knutsford; *s.* Sly Patrick, *d.* Wishful by Anklebiter. [Foal by Gentle Shepherd.]  
 369 III. (£5.)—MAJOR E. M. WATTS, M.C., Eastwood Park, Falfield, Glos., for *Eva* 3rd 4467, chestnut, foaled in 1912, bred by William Newton, Barrowby Old Hall, Grantham; *s.* Travelling Lad (Vol. 18, p. 766, G.S.B.), *d.* Eva 2nd 4078 by All Blue. [Foal by Ragged Robin.]  
 366 R. N.—THE BUXTON LIME FIRMS CO., LTD., Royal Exchange, Buxton, for *Flute*.

**Class 44.—Hunter Mares, with Foals at foot. [9 entries.]**

370 I. (£20. & Champion.<sup>2</sup>)—MAJOR CLIVE BURRENS, Swinton Grange, Malton, for *Heather* 3rd 4106, brown, foaled in 1919; *s.* Scotch Sign (Vol. 21, p. 497, G.S.B.), *d.* Whinflower 3801 by The Hero (Vol. 18, p. 83, G.S.B.). [Foal by Primary.]  
 374 II. (£10.)—GEOFF KENYON, Plainville, Haxby, York, for *Beauty Darling* 5792, grey, foaled in 1911; *s.* Primary; *d.* Pantomote. [Foal by Primary (Vol. 23, p. 156, G.S.B.)]  
 375 III. (£5.)—THOMAS MIDDLETON, Birdsall House, Malton, for *Gateshead* 5438 (Vol. 22, p. 234, G.S.B.), chestnut, foaled in 1910, bred by J. Callaghan; *s.* Walmgate (Vol. 17, p. 215, G.S.B.), *d.* Eminence (Vol. 20, p. 665, G.S.B.) by Turk's Cap. [Foal by Sir Harry.]  
 371 R. N.—ARTHUR S. BOWLEY, Gilston Park, Harlow, for *First Choice* 2nd.  
 H. C.—373, 377.

**Class 45.—Hunter Colt Foals, the produce of Mares in Classes 43 and 44. [4 entries.]**

379 I. (£10.)—MAJOR CLIVE BURRENS, Swinton Grange, Malton, for *Piarmigan*, bay, foaled April 1920; *s.* Primary; *d.* Heather 3rd 4106 by Scotch Sign (Vol. 21, p. 497, G.S.B.).  
 381 II. (£5.)—GEORGE DICKINSON, Cark Mills, Cark-in-Cartmel, Lancs., for *Cark Carlton* (Vol. 23, p. 155, G.S.B.), chestnut, foaled April 6; *s.* Silver Grill, *d.* The Pullet by Simon Square.  
 382 III. (£3.)—LORD MIDDLETON, Birdsall House, Malton, for chestnut, foaled April 23; *s.* Sir Harry, *d.* Gateshead 5438 (Vol. 22, p. 234, G.S.B.) by Walmgate (Vol. 17, p. 215, G.S.B.).

**Class 46.—Hunter Filly Foals, the produce of Mares in Classes 43 and 45.<sup>1</sup> [8 entries.]**

390 I. (£10.)—MAJOR E. M. WATTS, M.C., Eastwood Park, Falfield, Glos., for dark chestnut, foaled May 3; *s.* Ragged Robin, *d.* Eva 3rd 4407 by Travelling Lad (Vol. 18, p. 706, G.S.B.).  
 388 II. (£5.)—GEOFF KENYON, Plainville, Haxby, York, for grey, foaled May 16; *s.* Primary (Vol. 23, p. 156, G.S.B.), *d.* Beauty Darling 5792.  
 384 III. (£3.)—THE BUXTON LIME FIRMS CO., LTD., Royal Exchange, Buxton, for *Music Maid*, bay, foaled Feb. 16; *s.* Brown Prince, *d.* Flute by Talon 8.  
 385 R. N.—GEORGE DICKINSON, Cark Mills, Cark-in-Cartmel, Lancs., for *Cark Ripe Berry*.

<sup>1</sup> Prizes given by the Hunters' Improvement and National Light Horse Dredging Society.

<sup>2</sup> Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society, for the best Mare four years old and upwards in Classes 43 and 44, which must be registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

**Polo and Riding Ponies.**

**Class 47.**—*Polo and Riding Pony Stallions, foaled in or before 1918, not exceeding 15 hands.* [6 entries.]

392 I. (£15, & Champion<sup>1</sup>)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Reform 1002, bay, foaled in 1917; *s.* Rack Rent 842, *d.* Good Girl 2nd 2361.

393 II. (£10, & R. N. for Champion<sup>1</sup>)—C. J. PHILLIPS, Old Dalby Hall, Melton Mowbray, for Demon 2nd (Supp. 1918), chestnut, foaled in 1915; *s.* Declare, *d.* The Dowager 1893 (Vol. 18, p. 153), by Greville 1892.

394 III. (£5, & C. HOWARD TAYLOR) Middlewood Hall, Barnsley, for Complexion 1016, bay or brown, foaled in 1917; *s.* Calcium 558, *d.* Pink Rose 2820 by Gillie Flower 290.

395 R. N.—D. ALDRIDGE, Sketchley Hall Farm, Hinckley, for Sahara.

**Class 48.**—*Polo and Riding Pony Colts, Fillies or Geldings, foaled in 1920.*<sup>2</sup>

[2 entries.]

397 I. (£15, & Champion<sup>1</sup>)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Good Mark (Supp. 1921), bay filly; *s.* Goodward 948, *d.* Good Girl 2nd by Mark Forard.

398 II. (£10, & C. HOWARD TAYLOR) Middlewood Hall, Barnsley, for Corona (Supp. 1920), chestnut colt; *s.* Little Corona 814, *d.* Slice 2nd 2524.

**Class 49.**—*Polo and Riding Pony Colts, Fillies or Geldings, foaled in 1919.* [6 entries.]

399 I. (£15, & C. HOWARD TAYLOR)—MAJOR JOHN S. BAKERWELL, Cromhall, Charlfield, Glos., for Flutter, chestnut colt; *s.* John Lambton, *d.* Flu 2908 by White Wings 464.

402 II. (£10, & C. HOWARD TAYLOR) Middlewood Hall, Barnsley, for Shillalah (Supp. 1919), chestnut colt; *s.* Little Corona 814, *d.* Slice 2nd 2524.

400 III. (£5, & C. HOWARD TAYLOR)—GEORGE DICKINSON, Cark Mills, Cark-in-Cartmel, Lancs., for Cark Flying Vixen, brown filly; *s.* Courtisan 2nd, *d.* The Pullet by Simon Square.

401 R. N.—C. HOWARD TAYLOR, Middlewood Hall, Barnsley, for Gody Two Shoes. C.—101.

**Class 50.**—*Polo and Riding Pony Fillies or Geldings, foaled in 1918.* [3 entries.]

402 I. (£15, & C. HOWARD TAYLOR)—GILBERT GREENHAL, Walton Hall, Warrington, for King Arthur (Vol. 15, Supp. 1918), brown gelding; *s.* Arthur D 593, *d.* Kiddy 2903.

406 II. (£10, & R. N. for Champion<sup>1</sup>)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Morning Glow, bay filly; *s.* Prairie Fire, *d.* Coming Dawn by Mark Forard.

**Class 51.**—*Polo and Riding Pony Mares, with Foals at foot, not exceeding 14-2 hands.* [3 entries.]

410 I. (£15, & B. M.<sup>4</sup>)—C. HOWARD TAYLOR, Middlewood Hall, Barnsley, for Flu 2908, foaled in 1911, bred by J. S. Bakerwell, Cromhall, Charlfield, Glos.; *s.* White Wings 464, *d.* Snuffles 2167. [Foal by Field Marshal 512.]

**Arabs.**

**Class 52.**—*Arab Stallions, any age.* [5 entries.]

415 I. (£15, & Champion<sup>1</sup>)—LADY WENTWORTH, Crabbet Arabian Stud, Crabbet Park, Three Bridges, Sussex, for Rastin, chestnut, foaled in 1906, bred by the Crabbet Arabian Stud; *s.* Feynal, *d.* Risala by Mesoud.

411 II. (£10, & R. N. for Champion<sup>1</sup>)—F. H. B. COTTON-FOX, Burythorpe House, Malton, for Radium (Vol. 1), chestnut, foaled in 1901, breeder unknown.

414 III. (£5, & Champion<sup>1</sup>)—LADY WENTWORTH, for Nadir (Vol. 1), bay, foaled in 1901, bred by the Crabbet Arabian Stud; *s.* Mesoud, *d.* Nefta by Hadban.

412 R. N.—THE MARQUIS OF HARTINGTON, Chatsworth House, Bakewell, for Shwaiman.

**Class 53.**—*Arab Mares, with Foals at foot.*<sup>6</sup> [4 entries.]

418 I. (£15, Champion<sup>1</sup>, & R. N. for Champion<sup>1</sup>)—LADY WENTWORTH, Crabbet Arabian Stud, Crabbet Park, Three Bridges, Sussex, for Nasra (Vol. 2), bay, foaled in 1908, bred by the Crabbet Arabian Stud; *s.* Dicoud, *d.* Nefta by Hadban. [Foal by Nadir (Vol. 1).]

417 II. (£10, & R. N. for Champion<sup>1</sup>)—S. G. HOUGH, Springhouse Park, Theydon Bois, Essex, for Simlith, bay, foaled in 1903, bred by the Crabbet Arabian Stud, Crabbet Park, Three Bridges, Sussex; *s.* Seval, *d.* Selma by Ahmar. [Foal by Mureddin 2nd (Vol. 1).]

419 III. (£5, & Champion<sup>1</sup>)—LADY WENTWORTH, for Rim (Vol. 2), dark chestnut, foaled in 1910, bred by the Crabbet Arabian Stud; *s.* Astralid, *d.* Ridaa by Merzuk. [Foal by Skovronek (Vol. 1).]

416 R. N.—D. ALDRIDGE, Sketchley Hall Farm, Hinckley, Leics., for Bails.

<sup>1</sup> Champion Gold Medal given by the National Pony Society for the best Colt or Stallion in Classes 47-49.

<sup>2</sup> Prizes given by the National Pony Society.

<sup>3</sup> Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 48-51.

<sup>4</sup> Bronze Medal given by the National Pony Society for the best Foal in Class 51 entered in the Supplement to the National Pony Stud Book.

<sup>5</sup> Gold Medal given through the Arab Horse Society for the best Stallion in Class 52.

<sup>6</sup> Prizes given by the Arab Horse Society.

<sup>7</sup> Gold Medal given through the Arab Horse Society for the best Mare in Class 53.

<sup>8</sup> Gold Medal given through the Arab Horse Society for the best Foal in Class 53.

## Cleveland Bays.

**Class 54.—Cleveland Bay Stallions, any age. (1 entry.)**

420 I. (£15.)—GEORGE ELDERS, JUN., Hawthordale Farm, Whitby, Yorks, for Toft House Lad 1730, foaled in 1917, bred by George Elders, Toft House, Aislaby; s. Aislaby Lad 1722, d. Woodland Starlight 1323 by Woodland Pride 1659.

### **Yorkshire Coach Horses.**

**Class 55.—Yorkshire Coach Horse Stallions, any age. [1 entry.]**

421 I. (£15).—WILLIAM GRAYSON, Normanby House, Pickering, Yorks, for Priory Monk 2609, bay, foaled in 1917, bred by Robinson Bros, Priory Farm, Grosmont; s. Aislaby Lad 2542, d. Priory Hilda 1315 by King George 5th 2538.

## Hackneys.

**Class 58.—Hackney Stallion, foaled in 1919.<sup>1</sup> [4 entries.]**

424 I. (515).—WILLIAM GREENWOOD, Airedale Hackney Stud, Roundhay, Leeds, for Airedale Ring Maker, bay ; s. King's Chamberlain 13407, d. Anna Lombard 23553 by Evansius 8463.

424 II. (10).—H. C. CALLAY, Caley Stud Farm, Heacham, Norfolk, for Hunston Cardinal 13750, chestnut ; s. Leopard 9733, d. Rosalie 15380 by Rosador 4994.

423 III. (55).—FLETCHER & SONS, The Grange, Angram, York, for Angram Majestic 13489, chestnut, bred by J. Wright, East Thorpe, Major Weighton : s. Angram Majesty 13617, d. Lendesborough Suffragate 13486 by Kirkturne Rosador 8534.

425 R. W.—JOHN THOMAS YATES, Champion Farm, Quarndon, Derby, for Quarndon Do John, Class 57.—Hackney Stallions, foaled in or before 1918, over 14 and not exceeding

**Class 57.—Hackney Stallions, foaled in or before 1918, over 14 and not exceeding 15·2 hands. [6 entries.]**

428. I. (\$15.)—WILLIAM GREENWOOD, Airedale Hackney Stud, Roundhay, Leeds, for Airedale Proctor 13960, chestnut, foaled in 1917; s. King's Proctor 11102, d. Bell More 21237 of Polonus 4931.

431. II. (\$10.)—MRS. J. VAN NIEVELT VAN HATTUM, Camilla Lacey, West Humble, Dorking, for Carleton Gay Fashion 13447, dark chestnut, foaled in 1918, brot by W. J. Tennant, Carleton, Pontefract; s. Carleton Knowledge 12593, d. Marole Lily 18406 of Royal Danegelt 5785.

429. III. (\$5.)—SIR LEON KNOWLES, Bt., C.V.O., O.B.E., Westwood, Pendlebury, Manchester, for Safford Victor 12918, chestnut, foaled in 1914; s. Hopwood Vicero 9280, d. Knowle Halma 12633 by His Majesty 2513.

427. R. M.—Dr. HOWARD S. CHAVASSE, 56, High Street, Sutton Coldfield, for Tudor Emperor. H. C.—426. C.—430.

Class 58.—Hackney Stallions, foaled in or before 1918, over 15·2 hands. [2 entries.]

432 I. (#15, & Champion.)—WALTER BRIGGS, Linden Hall, Borwick, Carnforth, for Adbolton Kingmaker, 1274, dark chestnut, foaled in 1912, bred by A. W. Hickling, Wing Old Hall, Rutland; s. King's Proctor 11162, d. Adbolton St. Mary 1884 by St. Thomas 7261.  
 433 II. (#10, & R. N. for Champion.)—C. F. KENYON, Steele, Whitchurch, Salop, for Kirkburn Leader 12875, chestnut, foaled in 1912, bred by F. W. Buttle, Kirkburn Manor, Driffield; s. Mathias 6173, d. Kirkburn Princess 22089 by Kirkburn Torosad 8334.

**Class 59.—Hackney Fillies or Geldings, foaled in 1919.<sup>1</sup> [5 entries.]**

434 L. (15, & R. N. for Champion<sup>—</sup>)—MRS. FLETCHER & SONS, The Grange, Angrang, For, by Angram Express 25/2/4, chestnut filly, bred by G. R. Ditchburn, Thorganby, Yorks; s. Angram Majesty 11/967, d. Thorganby Princess 24/65 by Park House Chanticleer 11/843.

435 H. (10, —)—MALCOLM SINCLAIR, The Paddocks, Mill Hill, London, N.W.7, for Eton Chasuble 23/523, black filly, bred by the late J. Makeaue, Golborne Park, Newton-le-Willows, Lancs; s. King's Chamberlain 13/407, d. Chasuble 23/503 by Maribor 11/136.

435 H. (25, —) J. E. RUSHWORTH, Eskdale, Barcote, Grimsby, for Rushall Iris 23/505, dark chestnut filly, bred by E. L. F. Franklin, The Elms, Rushall; s. Capenor Addenda 12/979, d. Capenor Forbid 23/597 by Foothright 11/433.

438 R. N.—HERBERT WHITLEY, Primley, Paignton, Devon, for Primley Lenora.

Class 60.—Hackney Fillies or Geldings, foaled in 1918 [7 entries.]

I. (£15)—MALCOLM SINCLAIR, The Paddocks, Mill Hill, London, N.W.7, for Gai.

991 1. (16).—MALCOLM SINCLAIR, The Paddocks, Mill Hill, London, N.W.7, for **Caperon** Sherwood Fragility 24791, chestnut filly, bred by Henry B. Brandt, Caperon, Nutfield & Adbinton Sherwood Forester 12360, d. Fragility 10940 by Agility 2799.

\* Prizes given by the Hackney Horse Society.  
† Champion Prize of £10 given by the Hackney

- Champion Prize of £10 given by the Hackney  
56-58.

\* Champion Prize of £10 given by the Hackney Horse Society for the best Mare or Filly in Classes 59-61.

### Awards of Live Stock Prizes at Derby, 1921.

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442 II. (£10.)—WILLIAM MORTON, Grandford House, March, Cambs, for *Histon Lady Sunlight* 24722, roan filly, bred by John Chivers, Wychfield, Cambridge; *s.* Leopard 9783, *d.* Shining Sunlight 23342 by Antonius 10559.  
 439 III. (£5.)—*HARRY DERRY*, Holly Grove, Chase Terrace, Walsall, Staffs, for *Lady Mathias*, black chestnut filly, bred by Mrs. B. Tilbury, Warrington; *s.* Mathias 0473, *d.* Northern Pride 23268 by Lord Ossington 8933.  
 443 R. N.—F. Roots, The Nook Pedigree Plegories, Rolleston, Burton-on-Trent, for *Chevin Dora*.

#### Class 61.—Hackney Mares, with Foals at foot. [5 entries.]

448 I. (£15, & Champion.)—SIR LEES KNOWLES, Bt., C.V.O., O.B.E., Westwood, Pendlebury, Manchester, for *Slashing Dorothy* 23769, chestnut, foaled in 1913, bred by the late Sir Walter Gilbey, Bt., Epsom, Surrey; *s.* Antonius 10559, *d.* Flash Dorothy 19088 by Forest Star 4421. [Foal by Astro 13285.]  
 450 II. (£10.)—G. A. MARSHALL, Champion Farm, Quarrdon, Derby, for *Quarrdon Queen* 23298, chestnut, foaled in 1910; *s.* Cliffe Star 3739, *d.* Fair Confidence 3749 by Confidence 158. [Foal by Chevin Kingmaker 13177.]  
 446 III. (£5.)—G. A. BERESFORD, Swarkestone Glebe Farm, Chellaston, Derby, for *Newborough Lady Violet* 29479, dark chestnut, foaled in 1917; *s.* Scoutmaster 12437, *d.* Step Dance 22241 by Mathias 0473. [Foal by Albulton Kingmaker 12274.]

### Hackney Ponies.

#### Class 62.—Hackney Pony Stallions, foaled in or before 1918, not exceeding 14 hands. [2 entries.]

451 I. (£15, & Special.)—C. F. KNYON, Steele, Whitchurch, Salop, for *Bricket Fusilier* 13509, bay, foaled in 1918, bred by the late W. W. Bourne, Garston Manor, Watford; *s.* Fusce 12628, *d.* Colne Marvel 23309 by Gentleman John 3624.  
 452 II. (£10, & R. N. for Special.)—MRS. VAN NEVELT VAN HATTUM, Camilla, Lacey, West Humble, Dorking, for *Brashfield Fusce* 13567, bay, foaled in 1917, bred by Mrs. A. C. King, Brashfield Manor, Romsey; *s.* Fusce 12626, *d.* Monatty 17593 by Fire Boy 7440.

#### Class 63.—Hackney Pony Mares, with Foals at foot, not exceeding 14 hands.<sup>3</sup> [5 entries.]

453 I. (£15, & Special.)—J. BLAKELOCK, Falinge Pony Stud, Shawfield, Rochdale, for *Falange Trifle* 29129, bay, foaled in 1915, bred by Geoffrey Radford, 14, Spotland Road, Rochdale; *s.* Southport Swell 11219, *d.* Cherisey Model 19002 by Sir Horace 5402. [Foal by Fusce 12624.]  
 456 II. (£10, & R. N. for Special.)—F. W. PASS, Congleton, for *Ponina* 23285, bay, foaled in 1913, bred by B. Oakes, Hulden Padlocks; *s.* Treguron Horace 9476, *d.* Vivienne 16303 by Sir Horace 5402. [Foal by Fusce 12626.]

### Welsh Mountain Ponies.<sup>5</sup>

#### Class 64.—Welsh Pony Stallions, foaled in 1917 (not exceeding 12 hands), or 1918 (not exceeding 11.3 hands), or 1919 (not exceeding 11.2 hands). [2 entries.]

459 I. (£15.)—MRS. H. D. GREENE, Grove, Craven Arms, Salop, for *Grove Sprightly*, grey, foaled in 1918; *s.* Bleddfa Shooting Star 73, *d.* Grove Sprite 2nd 4431 by Grove Ballistic 200.  
 458 II. (£10.)—W. MARSHALL DUDDALE, Llwyn, Llanfyllin, Mont., for *Llwyn Mighty Atom*, chestnut, foaled in 1918; *s.* Llwyn Little Wonder 905, *d.* Llwyn Coralie 5205 by Llwyn Cymro 407.

#### Class 65.—Welsh Pony Stallions, foaled in or before 1916, not exceeding 12 hands. [4 entries.]

461 I. (£15.)—MRS. H. D. GREENE, Grove, Craven Arms, Salop, for *Bleddfa Shooting Star* 73, white, foaled in 1901, bred by S. M. Wilnot, The Chalet, Alvaston, Glos.; *s.* Dyoll Starlight 4, *d.* Alvaston Belle 572 by Cymro.  
 460 II. (£10.)—W. MARSHALL DUDDALE, Llwyn, Llanfyllin, Mont., for *Kilhendre Celtic Silverlight* 953, grey, foaled in 1916, bred by Miss Chapman, Kilhendre, Ellesmere; *s.* Bleddfa Shooting Star 73, *d.* Grove Apricot 4421 by Stretton Torchlight.  
 462 III. (£5.)—F. FITCH MASON, The Parauau, Kilnay, Glam., for *Grove Grey Dawn* 893, grey, foaled in 1914, bred by Mrs. H. D. Greene, Grove, Craven Arms; *s.* Dyoll Starlight 4, *d.* Grove Greyling 2879 by Stretton Dynamite 76.

<sup>1</sup> Champion Prize of £10 given by the Hackney Horse Society for the best Mare or Filly in Class 61-31.

<sup>2</sup> Special Prize of £10 given by the Hackney Horse Society for the best Stallion in Class 62.

<sup>3</sup> Prizes given by the Hackney Horse Society.

<sup>4</sup> Special Prize of £10 given by the Hackney Horse Society for the best Mare in Class 63.

<sup>5</sup> The Prizes in Classes 65, and Silver Medals and Illustrated Certificates to the First Prize Winners in all three Classes were given by the Welsh Pony and Cob Society.

**Class 66.—Welsh Pony Mares, foaled in or before 1917, with Foals at foot, not exceeding 12 hands.** [6 entries.]

464 I. (£15.)—W. MARSHALL DUDDALE, Llwyn, Llanfyllin, Montgomery, for *Llwyn Lyddis* 6085, chestnut, foaled in 1916; *s. Llwyn Cymro* 407, *d. Lady Lightfoot* 2302 by Gwyndy Cymro 154. [Foal by *Lwyn Wonderful*.]

465 II. (£10.)—MRS. H. D. GREENE, Grove, Craven Arms, Salop, for *Grove Light Heart* 5159, grey, foaled in 1917; *s. Dyoll Starlight* 4, *d. Bleddfa Tell Tale* 943 by Tyrant 477. [Foal by *Bleddfa Starlight*.]

466 III. (£10.)—FIONA MASON, The Farlam, Kilay, Glam., for *Farlam Silverlight* 3802, grey, foaled in 1911, bred by H. Medric Lloyd, Llanwanda; *s. Dyoll Starlight* 4, *d. Dyoll Quicksilver* 76. [Foal by *Hawgarr Matchlight* 732.]

467 R. N.—MRS. G. LLEWELLYN, for *Sparklight of Combe* (late *Baglan Sparklight*).  
H. C.—166.

**Shetland Ponies.****Class 67.—Shetland Pony Stallions, foaled in or before 1918, not exceeding 10-2 hands.** [7 entries.]

471 I. (£15, & Champion.)—MRS. ETIA DUFFETS, Penniwell, Elstree, Herts, for *Vagary of Penniwell* 841, black, foaled in 1912, bred by the Ladies Hope, Bodiam, Sussex; *s. Heilum* 452, *d. Viola* 2168 by Oman 33.

472 II. (£10.)—MRS. ETIA DUFFETS, for *Huzzor of Penniwell* 884, black, foaled in 1911, bred by Charles Reilly, Kirkcudbright, Kirkcudbright; *s. Haldor* 270, *d. Barbara of Penniwell* 2919 by *Nathus* 571.

473 III. (£5.)—R. W. R. MACKENZIE, Earlshill, Leuchars, Fife, for *Why-Not of Earlshill* 898, grey, foaled in 1913; *s. Empire Day* 539, *d. Hillswick White Wings* 339.

474 R. N.—R. W. R. MACKENZIE, for *Bandrol*.  
C.—472.

**Class 68.—Shetland Pony Mares, with Foals at foot, not exceeding 10-2 hands.** [2 entries.]

478 L. (£15, & R. N. for Champion.)—MRS. ETIA DUFFETS, Penniwell, Elstree, Herts, for *Mayfly of Penniwell*, black, foaled in 1906, bred by William Low, Blebo, Cuper; *s. Glencairn* 314, *d. Diddy* 2193. [Foal by *Vagary of Penniwell* 841.]

**Riding Classes.<sup>2</sup> Hunters.****Class 69.—Hunter Mares or Geldings, foaled in 1917, up to and from 12 to 14 stones.** [3 entries.]

479 I. (£15.)—JOHN D. D. EVANS, Hirwdigrech, Brecon, for *Indigo*, brown gelding; *s. Spey Royal*, *d. by Gold Medallist*.

**Class 70.—Hunter Mares or Geldings, foaled in 1917, up to more than 14 stones.** [2 entries.]

480 I. (£15.)—GEOFF KENYON, Plainville, Haxby, York, for *Sequence*, chestnut gelding.  
488 II. (£10.)—MRS. R. COTTRELL, Sandal Lodge, Droitwich, for *Cinema* 5830, grey mare; *s. Puro Caster*, *d. Comflower by Snowflake* 95.

**Class 71.—Hunter Mares or Geldings, foaled in or before 1917, up to from 12 to 14 stones.** [8 entries.]

498 L. (£15.)—W. GALE, Waltham, Melton Mowbray, for *Sunrise*, bay gelding, foaled in 1916, bred by Hon. G. Lambton, Newmarket; *s. Sunningdale*, *d. Lady Helen*.  
493 II. (£10.)—BARONESS BURTON, Rangemore, Burton-on-Trent, for *Sunday Sleep* 345, chestnut gelding, foaled in 1914; *s. The Chair*, *d. Peace by Warpath*.  
504 III. (£5.)—JOSEPH TAYLOR, Moss Hall, Stretton, Warrington, for *Fox Catcher*, brown gelding, foaled in 1915.  
485 IV. (£3.)—C. J. PHILLIPS, Old Dalby Hall, Melton Mowbray, for *Clarion*, bay gelding; *s. Chanteur*, *d. Lady Grace*.

**Class 72.—Hunter Mares or Geldings, foaled in or before 1917, up to more than 14 stones.** [6 entries.]

503 I. (£15.)—GRESHAM B. RADCLIFFE, Pool Bank Farm, Tarvin, Cheshire, for *Red Friar*, chestnut gelding, foaled in 1914.  
506 II. (£10.)—CHARLES WILLIAM CATT, The Outwoods, Duffield, Derby, for *Ladybird*, chestnut mare, foaled in 1913, bred by Colonel McKie, Scotland; *s. Avoca*.  
507 III. (£5.)—SYDNEY ORAM, 24, Hardwick Street, Buxton, for *Pastimaster*, dark chestnut gelding, foaled in 1914.  
508 IV. (£3.)—WILLIAM RICHARDSON, Kedleston House, Kedleston, Derby, for *Broadwood* 2nd, bay gelding, foaled in 1915, bred by William Harrison, Hulland Ward, Derby; *s. King Crown*.

<sup>1</sup> Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Shetland Pony in Classes 67 and 68.

<sup>2</sup> Prizes given by the Derby Local Committee.

**Class 73.**—*Hunter Mares or Geldings, foaled in or before 1917, up to from 12 to 13-7 stones.* [16 entries.]

498 I. (£20).—W. GALE, for *Sunrise*. (See Class 71.)  
 523 II. (£15).—MRS. W. HARDCOURT WEBB, Spring Grove, Bewdley, Worcs., for *Red Fox*, chestnut gelding, foaled in 1913.  
 509 III. (£10).—GILES BISHOP, Roodimore, Winslow, Bucks, for *Regal*, chestnut gelding.  
 500 IV. (£5).—MAJOR R. C. HUNTER, Foulmire Law, Belsay, Newcastle-on-Tyne, for *Pussy*, foal, bay gelding, foaled in 1914.  
 494 V. (£3).—JOHN DRAGE, Chapel Brampton, Northampton, for *Monk*, chestnut gelding.

**Class 74.**—*Hunter Mares or Geldings, foaled in or before 1917, up to more than 13-7 and not more than 15 stones.* [15 entries.]

496 I. (£20, & R. N. for Champion<sup>1</sup>).—JOHN DRAGE, Chapel Brampton, Northampton, for *Red King*, chestnut gelding.  
 525 II. (£15).—MRS. EUSTACE MANSFIELD, The Red House, Newbridge, co. Kildare, for *Northants 509*, chestnut gelding, foaled in 1914, bred by the late Mrs. Panton, Blessington, co. Wicklow; *s. Orlando, d. Lady Cerasus by Cerasus*.  
 495 III. (£10).—JOHN DRAGE, for *Mascot*, brown gelding, foaled in 1916.  
 530 IV. (£5).—SIR EDWARD D. STERN, Fan Court, Cheshire, for *Botha* (Supp. No. 367), brown gelding, foaled in 1915; *s. Dunfearnay, d. Brunette*.  
 510 V. (£3).—B. GILES BISHOP, Roodimore, Winslow, Bucks, for *Regent*, chestnut gelding.

**Class 75.**—*Hunter Mares or Geldings, foaled in or before 1917, up to more than 15 stones.* [10 entries.]

407. I. (£20, & Champion<sup>1</sup>).—JOHN DRAGE, Chapel Brampton, Northampton, for *Jorrocks*, bay gelding, foaled in 1915.  
 491 II. (£15).—GEORGE KENYON, Plainville, Haxby, York, for *White Heart*, chestnut gelding, foaled in 1915.  
 509 III. (£10).—GERSHOM B. RADCLIFFE, for *Red Friar*. (See Class 72.)  
 509 IV. (£5).—CHARLES WILLIAM CATT, for *Ladybird*. (See Class 72.)  
 532 V. (£3).—CHRIS WILSON, Kentmere, Kendal, for *Rigmaden*, bay gelding, foaled in 1915.

### Hacks and Riding Ponies.

**Class 76.**—*Mares or Geldings, over 10-2 and not exceeding 12-2 hands. To be ridden by a child born in or after 1909.* [6 entries.]

533 I. (£15).—MISS ENA CADBURY-BROWN, Rotschfords, Wormingford, Essex, for *Happy Day*, bay mare, foaled in 1913.

**Class 77.**—*Mares or Geldings, over 12-2 and not exceeding 14 hands. To be ridden by a child born in or after 1907.* [4 entries.]

536 I. (£15).—MRS. PHILIP HUNLOKE, Stylehurst Farm, Capel, Surrey, for *Kit-Cat*, brown mare, foaled in 1917, bred by Sir Gilbert Greenhill, Bt., C.V.O., Walton Hall, Warrington; *s. Victory 2nd 665, d. Kidd 2003*.  
 538 II. (£10).—CAPTAIN H. FITZHERBERT WRIGHT, Yeldersley Hall, Ashbourne, for *Dolly*, strawberry roan mare.  
 537 III. (£5).—JOHN A. SMITH, The Mount, Longford, Derby, for *Lighthart*, dark brown gelding, foaled in 1916.  
 539 R. N.—THOMAS WRIGHT, Colyear Street, Derby, for *Doll*.

**Class 78.**—*Mares or Geldings, over 14 and not exceeding 15 hands.* [5 entries.]

513 I. (£15).—MRS. HUGH CORPET, Downton, Shrewsbury, for *Goldflake*, chestnut mare, foaled in 1916; *s. Neyland, d. Harry Monmouth*.  
 542 II. (£10).—E. S. TOMLINSON, North Rausby, Sleaford, Lincs., for *Charley*, brown gelding, foaled in 1915.  
 486 III. (£5).—C. J. PHILLIPS, Old Dalby Hall, Melton Mowbray, for *Unity*, bay mare, foaled in 1916; *s. Ulrian, d. Lucy Glass* (Vol. 22, p. 502, G.S.B.) by *Isinglass*.

**Class 79.**—*Mares or Geldings, over 15 hands.* [14 entries.]

541 I. (£15, & Champion<sup>2</sup>).—LADY PENRHYN, Wicken Park, Stony Stratford, Bucks, for *Cuckoo*, bay mare, foaled in 1916; *s. Sant Murgis*.  
 550 II. (£10, & R. N. for Champion<sup>2</sup>).—MRS. WESTON STEVENS, Henbury Court Hotel, Henbury, Bristol, for *Tarantella 2nd*, chestnut mare, foaled in 1917, bred by Major Fane-Philipps, The Cavalry Club, London; *s. Stortford, d. Tarantella by Turgo*.  
 544 III. (£5).—THE HON. MRS. DRAKE LOWE, Heathfield House, Bletchington, Oxon., for *Irish Fern*, chestnut gelding, foaled in 1916; *s. Irish Linen, d. Osmandra by St. Osmund*.  
 516 R. N.—ROWLAND F. MEYRICK, Apley Castle, Wellington, Salop, for *Light Heart*.

<sup>1</sup> Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 69-75.

<sup>2</sup> Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hacks and Riding Ponies for the best Animal in Classes 76-79.

**Driving Classes.<sup>1</sup>**

## SINGLE HARNESS.

**Class 80.—Harness Mares or Geldings (Novice), not exceeding 14 hands.** [5 entries.]

553 I. (£15.)—JOHN HIGHEST, Wardhead, Stewarton, N.B., for Park Modesta 24564, brown mare, foaled in 1916, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Royal Success 8995, *d.* Lucy Melbourne 23671 *by* Successful 8314.

551 II. (£10.)—JAMES E. AGATE, 112A, Warwick Street, London, S.W.1, for Jimmy Wilde (late Southwark Footmark) 13238, chestnut gelding, foaled in 1916, bred by Joshua Ball, Southworth Hall, Warrington; *s.* King's Proctor 11102, *d.* Terrington Feather 21703 *by* Leopard 9783.

561 III. (£5.)—MRS. F. L. WALKER, Meadow Street, Cardiff, for Buckley Peggy, bay mare, foaled in 1914, bred by C. F. Kenyon, Steele, Whitechurch, Salop; *s.* Torchfire 9472, *d.* Peggy Sure 2nd 10403 *by* Nobby Shot 2200.

**Class 81.—Harness Mares or Geldings (Novice), over 14 and not exceeding 15 hands.** [10 entries.]

563 I. (£15.)—ROBERT BLACK, The Grove, Osbalwick, York, for Ermada 23537, chestnut mare, foaled in 1912, bred by Robert Scott, Thorntown, Cariuke, Lanark; *s.* Flash Mathias 6426, *d.* Heida Gabler 19153 *by* Mathias 6473.

572 II. (£10.)—H. J. COLEBROOK, South Lodge, Iver Heath, Bucks.

577 III. (£5.)—ATTEX GEMMEL, 10, Abingdon Villas, Kensington, London, W.8, for Belle of All (late Egwair Black Pearl 24045), black mare, foaled in 1915, bred by Thomas S. Breckin, Park Hill, Northenden; *s.* Mathias 6473, *d.* Goodmanham Lady 19126 *by* Penny 4931.

562 IV. (£3.)—JOSEPH BALL, Southworth Hall, Warrington, for Southworth Wonder, chestnut gelding, foaled in 1917; *s.* King's Proctor, 11102, *d.* Southworth Belle 17742 *by* Lord Drevton 2nd 6819.

589 R. N.—EDWIN TIPPER, Cross Plains, Newborough, Burton-on-Trent, for Newborough Pearl, H. C.—578.

**Class 82.—Harness Mares or Geldings (Novice), over 15 hands.** [11 entries.]

564 I. (£15. & Champion<sup>2</sup>)—ROBERT BLACK, The Grove, Osbalwick, York, for Gondolier, chestnut gelding, foaled in 1917, bred by the late John Makeague, Golborne Park, Newton-le-Willows; *s.* King's Proctor 11102, *d.* Pious Bonds 16103 *by* Polonus 4931.

593 II. (£10.)—R. N. & R. N. for Champion<sup>2</sup>)—J. E. ROSEWORTH, Eskdale, Bargegate, Grimsby, for Harbrough Victor, brown gelding, foaled in 1914, bred by Joshua Ball, Southworth Hall, Warrington; *s.* King's Proctor 11102, *d.* Southworth Belle 17742 *by* Lord Drevton 2nd 6817.

573 III. (£5.)—H. J. COLEBROOK, South Lodge, Iver Heath, Bucks, for Lady Saint 23217, dark chestnut mare, foaled in 1913, bred by the late John Makeague, Golborne Park, Newton-le-Willows; *s.* King's Proctor 11102, *d.* Doubt Then 17282 *by* Polonus 4931.

554 IV. (£3.)—JOHN HIGHEST, Wardhead, Stewarton, N.B., for Kentmere King, bay gelding, foaled in 1915, bred by J. Harold Wright, Morton, Bingley, Yorks; *s.* Mathias 6473, *d.* Queen of Newton 16126 *by* Royal Dangereux 5785.

591 R. N.—WILLIAM HEATH, Shavington House, Crewe, for Shavington Princess Parade, C.—581, 590.

**Class 83.—Harness Mares or Geldings, not exceeding 13-2 hands.** [7 entries.]

594 I. (£15.)—F. KENYON, Steele, Whitechurch, Salop, for Arkholme Venus 24435, bay mare, foaled in 1910, bred by Henry Gilding, Rockfield, Gateacre, Liverpool; *s.* Southwell Swell 11219, *d.* Talkie Princess 21695 *by* Talkie Fire King 0932.

553 II. (£10.)—JOHN HIGHEST, for Park Modesta. (See Class 80.)

568 III. (£5.)—THOMAS EVANS, Buckley Villas, Swansea, for Buckley Flame, brown gelding, foaled in 1917, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Melbourne Shot 13055, *d.* Phyllis Melbourne 23281 *by* Melbourne Hall 11510.

595 R. N.—ANDREW MATTLEY, Thorneleigh, Vicar's Cross, Chester, for Bickett Maceot.

**Class 84.—Harness Mares or Geldings, over 13-2 and not exceeding 14 hands.**

[5 entries.]

608 I. (£15.)—MRS. JAMES PUTNAM, Farringdon House, near Exeter, for Melbourne Fire, bay gelding, foaled in 1910, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Royal Success 8995, *d.* Worley Bell 14873 *by* Sir Horace 5402.

565 II. (£10.)—R. BELCHER, High Street, Bromwich, for Buckley Searchlight, brown gelding, foaled in 1914, bred by W. O. Suckthurs, Woodfold, Bury, Lancs; *s.* Torchfire 9472, *d.* Walshaw Sunlight 24608 *by* Ganymede 2078.

567 III. (£5.)—THOMAS EVANS, Buckley Villas, Swansea, for Melbourne Wonder, brown gelding, foaled in 1915, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Melbourne Hall 11510, *d.* Myra Melbourne 23259 *by* Royal Success 8995.

<sup>1</sup> Prizes given by the Derby Local Committee.<sup>2</sup> Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Animal in the Novice Classes 80 to 82.

## Awards of Live Stock Prizes at Derby, 1921.

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### Class 85.—*Harness Mares or Geldings, over 14 and not exceeding 15 hands.* [13 entries.]

569 I. (£15, R. N. for Champion,<sup>1</sup> & R. N. for Champion,<sup>2</sup>)—MRS. JAMES PUTNAM, Farringdon House, near Exeter, for Park Carnation 22717, dark brown mare, foaled in 1907, brod by William, out of Park Beauty, Wimbleton, Cambs.; s. Luath 9328, d. Park Sunshine 22733 by Lord Dundonald 7909.  
586 II. (£10)—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, for V.C. G. 79, brown gelding, foaled in 1917, brod by Robert Scott, Thorlhouette, Cariukie; s. Mathias 6473, d. Golden Glow 20637 by Mathias 6473.  
596 III. (5s.)—J. W. G. SMITH, Wensleydale Stud, Aysgarth, Yorks, for Garston Madge 23948, brown roan mare, foaled in 1914, brod by G. A. Cobb, Woodside, Garston; s. Leopard 9788, d. Brontone Princess 8707 by Garston Duke of Connought 3009.  
592 IV. (5s.)—WILLIAM HEATH, Shavington House, Crewe, for Lilac Domino 24861, bay mare, foaled in 1914, brod by E. J. Allen, Stanhill, Wimbleton, Dartford; s. Leopard 9783, d. Croydon Surprise 15021 by Conquest 2nd 5560.  
589 R. N.—EDWIN TIPPER, for Newborough Pearl. H. C.—577, 579.

### Class 86.—*Harness Mares or Geldings, over 15 and not exceeding 15·2 hands.* [9 entries.]

570 I. (£15, Champion,<sup>1</sup> & Champion,<sup>2</sup>)—MRS. JAMES PUTNAM, Farringdon House, near Exeter, for Field Marshal (late Harleyston Maharattha 12650), brown gelding, foaled in 1913, brod by J. E. Kerr, Harleyston Castle, Dollar, N.B.; s. Mathias 6473, d. Terrington Starlight 16258 by Goldfinch 6th 1791.  
593 II. (£10)—J. E. RUSHWORTH, for Habbrough Victor. (See Class 82.)  
597 III. (£5.)—JOSEPH SMITH 56, Victoria Road East, Leicester, for Leicester Princess 24544, dark chestnut mare, foaled in 1916, brod by J. O. Nicol, 142, London Road, Leicester; s. Mathias 6473, d. Westfield Surprise 21736 by Polonius 7208.  
554 IV. (5s.)—JOHN HIGHER, for Kentmere King. (See Class 82.)  
573 R. N.—H. J. COLEBROOK, South Lodge, Iver Heath, Bucks. C.—551, 550.

### Class 87.—*Harness Mares or Geldings, over 15·2 hands.* [8 entries.]

564 I. (£15.)—ROBERT BLACK, for Gondolier. (See Class 82.)  
587 II. (£10.)—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, N.B., for Knight Errant, bay gelding, foaled in 1915, brod by Caleb Humphreys, Higher Traumere, Birkenhead; s. Mathias 6473, d. Calabar Canadian Girl 19815 by Garston Duke of Connought 3009.  
598 III. (£5.)—WALTER BRIGGS, Linden Hall, Borwick, Carnforth, for Albin Queen Mary 24955, dark chestnut mare, foaled in 1916, brod by Alfred Rowell, West Rudham, King's Lynn; s. Adinton Kingmaker 12274, d. Queen Leopard 24053 by Leopard 9783.  
591 IV. (£5.)—WILLIAM HEATH, Shavington House, Crewe, for Shavington Princess Parade 24862, chestnut mare, foaled in 1914; s. Antonius 10539, d. Hagg Wood Princess 15851 by Langton 6078.

### DOUBLE HARNESS.

### Class 88.—*Pairs of Harness Mares or Geldings, not exceeding 15 hands.*

[2 entries.]

576 I. (£20, & R. N. for Champion,<sup>2</sup>)—H. J. COLEBROOK, South Lodge, Iver Heath, Bucks, for The Editor and Semina.  
578 & 579 II. (£15.)—PAUL HOFFMANN, 4, Cardigan Mansions, Richmond Hill, Surrey, for Orford Favourite, dark chestnut mare, foaled in 1914, brod by Alex. Morton, Gowen Bank, Darvel, N.B.; s. Mathias 6473, d. Dice-Rox 20629 by Westfield Polonius 9988; and Orford Quality, dark chestnut gelding, foaled in 1916, brod by W. J. Tennant, Carlton, Pontefract; s. Carlton Quality 12356, d. Dashing Beauty 23070 by Polonius 4931.

### Class 89.—*Pairs of Harness Mares or Geldings, over 15 hands.* [5 entries.]

587 & 588 I. (£20, & Champion,<sup>2</sup>)—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, N.B., for Knight Errant (see Class 87); and Knight Templar (late Coalition Candidate 13332), bay gelding, foaled in 1917, brod by John Chivers, Wychfield, Cambridge; s. Mathias 6473, d. Inverness Duchess of Connought 15192 by Garston Duke of Connought 3009.  
576 II. (£15.)—H. J. COLEBROOK, for Sir Peter, gelding; and Lady Teazle, mare.  
581 & 582 III. (£10.)—PAUL HOFFMANN, 4, Cardigan Mansions, Richmond Hill, Surrey, for Orford Flame, dark chestnut gelding, foaled in 1913, brod by John Conacher, Wylye Green, Birmingham; s. Mathias 6473, d. Warwick Ophelia 21736 by Polonius 4931; and Orford Mascol, dark chestnut gelding, foaled in 1917, brod by William Bramley, North Driffield, Selby; s. Ross Polonius 11867.

<sup>1</sup> Gold Challenge Cup, value Fifty Guineas, given for the best Animal in Classes 83 to 87.  
<sup>2</sup> Champion Prize of £5 given by the Hackney Horse Society for the best Mare or Gelding in Classes 80 to 87, the produce of a registered Hackney Stallion.

<sup>3</sup> Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Pair in Classes 88 and 89.

## TANDEMS.

**Class 90.—Pairs of Harness Mares or Geldings, not exceeding 15 hands.** [2 entries.]

576 I. (£20, & R. M. for Champion.)—H. J. COLEBROOK, for The Editor and Semina.  
 578 & 579 II. (£15.)—PAUL HOFFMANN, for Oxford Favourite and Orford Quality. (See Class 88.)

**Class 91.—Pairs of Harness Mares or Geldings, over 15 hands.** [3 entries.]

599 I. (£20, & Champion.)—MISS SYLVIA BROCKLEBANK, O.B.E., Wing Grange, Oakham, for Illumination, bay gelding, foaled in 1906, bred by the Rt. Hon. Frederick Wrench, Kilkissoona, Ballybrack, Co. Dublin; s. Blaze 2nd 2376; and Optimistic, grey gelding, bred by M. Daye, Maesynan Hall, Flint; s. Kassimeda S207.  
 576 II. (£15.)—H. J. COLEBROOK, for Sir Peter, gelding; and Lady Teazle, mare.  
 581 & 582 III. (£10.)—PAUL HOFFMANN, for Oxford Fams and Orford Maceel. (See Class 89.)

## Four-in-Hand Teams.

**Class 92.—Mares or Geldings.** [2 entries.]

601 I. (£20, & Champion.)—W. W. THEOBALD, Bournside, Cheltenham, for four roans.

JUMPING COMPETITIONS.<sup>3</sup>

**Class A.—Mares or Geldings.** [24 entries.]

13 I. (£25.)—FRANK ALLISON, Newbiggin, Penrith, for Tempress.  
 13 II. (£10.)—F. W. FOSTER, Marsh Farm, Etwall, Derby, for Biplane.  
 17 III. (£5.)—THOMAS GLENCCROSS, The Paddocks, Stoke Gifford, Bristol, for Monarch.  
 3 IV. (£3.)—F. W. RUDDER, Dorridge, Birmingham, for Shylock.  
 4 V. (£3.)—W. D. EARDLEY, Colehurst Manor, Market Drayton, for Jimmy.

**Class B.—Mares or Geldings.** [23 entries.]

20 I. (£20.)—JOSEPH TAYLOR, Moss Hall, Stretton, Warrington, for Battle Axe.  
 1 II. (£10.)—S. W. WOODHILL, New Street, Wellington, Salop, for Tip Top.  
 5 Equal Prize | W. D. EARDLEY, Colehurst Manor, Market Drayton, for Jimmy.  
 6 of £4. | F. W. FOSTER, Marsh Farm, Etwall, Derby, for Biplane.  
 2 V. (£3.)—T. E. WHITTINGHAM, Byrkley Street, Burton-on-Trent, for John B.

**Class C.—Mares or Geldings.** [20 entries.]

16 I. (£15.)—MRS. E. ADCOCK, The Grange, Thurnastone, nr. Leicester, for Novice.  
 1 II. (£10.)—F. TOWNSEND CLARKE, Acacia House, Bottesford, Nottingham, for Walmgate.  
 6 III. (£5.)—F. W. RUDDER, Dorridge, Birmingham, for York.  
 4 IV. (£3.)—THOMAS GLENCCROSS, The Paddocks, Stoke Gifford, Bristol, for Monarch.  
 17 V. (£2.)—MISS M. A. BULLWS, Edgbaston Riding School, Barlows Road, Edgbaston, Birmingham, for Ormond Boy.

**Class D.—Champion Class. Mares or Geldings.** [21 entries.]

2 I. (£30.)—W. D. EARDLEY, Colehurst Manor, Market Drayton, for Jimmy.  
 8 II. (£20.)—FRANK ALLISON, Newbiggin, Penrith, for Tempress.  
 16 III. (£15.)—T. E. WHITTINGHAM, Byrkley Street, Burton-on-Trent, for John B.  
 11 IV. (£10.)—F. W. FOSTER, Marsh Farm, Etwall, Derby, for Biplane.  
 3 Equal Prize | F. W. RUDDER, Dorridge, Birmingham, for York.  
 12 of £2 10s. | F. W. RUDDER, for Skylark.

## CATTLE.

## Shorthorns.

**Class 93.—Shorthorn Bulls, calved in or before 1918.** [15 entries.]

615 I. (£15, & R. M. for Champion.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Shenley White Ensign 152033, white, born Aug. 1, 1918, bred by C. F. Raphael, Porters Lodge, Shenley; s. Edgote Brigade Major 130815, d. Golden Necklace by Bachelor of Arts 101330.  
 605 II. (£10.)—SIR BERNARD GREENWELL, Bt., Marden Park, Woldingham, Surrey, for Pierrepont Golden Prince 144426, dark roan, born May 10, 1917, bred by Earl Manvers, Holme Pierrepont, Nottingham; s. Royal Sovereign 133193, d. Crocus 18th by Silverhill Snowflake 107057.

<sup>1</sup> Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Tandem in Classes 90 and 91.

<sup>2</sup> Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Team in Class 92.

<sup>3</sup> Prizes given by the Derby Local Committee.

<sup>4</sup> Champion Prize of £20, given by the Shorthorn Society, for the best Bull in Classes 93-97.

A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Bull.

606 **III. (£5.)**—**GEORGE HARRISON**, Gainford Hall, Darlington, for **Ruler** 139156, red roan, born March 24, 1916, bred by Major E. G. S. Hornby, Dalton Hall, Westmorland; *s.* Mountaineer 121694; *d.* Dalton Rosemary 3rd by Commander 105001.  
**616 R. N.—F. B. WILKINSON**, for **Swansfield Beau**.  
**H. C.**—611, 613.

**Class 94.**—*Shorthorn Bulls, calved on or between January 1, 1919, and March 31, 1919.*<sup>1</sup> [18 entries.]

628 **L (£15. & Champion.)**—**ALBERT JAMES MARSHALL**, Bridgebank, Stranraer, for **Bridgebank Paymaster** 154308, light roan, born Jan. 28; *s.* Gainford Ringleader 138657; *d.* Princess Christina by Broadhorns 124530.  
**625 II. (£10.)**—**GEORGE HARRISON**, Gainford Hall, Darlington, for **Count Broadhooks** 155070, roan, born Feb. 25, bred by representatives of the late Thomas Douglas, Rhynie, Fearn, Ross-shire; *s.* Red Knight 133023, d. Countess Broadhooks 2nd by Diamond Emperor 110867.  
**629 III. (£5.)**—**ST. J. MACGILLIVRAY**, Calrossie, Nigg, Ross-shire, for **Garbity Royal Duke** 155949, red, born Mar. 10, bred by the late James McWilliam, Garbity Orion; *s.* Edgeot Flatterer 125374, d. Garbity Princess by *Pride* of Avon 88678.  
**617 R. N.—HIS MAJESTY THE KING**, Royal Farms, Windsor, for **Windsor Matchless**.  
**H. C.**—624, 630. **C.**—610.

**Class 95.**—*Shorthorn Bulls, calved on or between April 1, 1919, and December 31, 1919.*<sup>1</sup> [42 entries.]

660 **I. (£15.)**—**CAPTAIN J. MACGILLIVRAY**, Calrossie, Nigg, Ross-shire, for **Doune Monarch** 155390, roan, born April 1, bred by the Earl of Moray, Doune Lodge, Perthshire; *s.* Eclipse of Collyne 136344, d. Lady Hawthorn by Dinglass Royalist 108496.  
**667 II. (£10.)**—**OLIVER W. PORKITT**, Hothey, East Leake, nr. Loughborough, for **Hean Chorister** 156374, white, born May 30, bred by Lord Merthyr, Hean Castle, Saundersfoot; *s.* Collyne Chancellor 119543, d. Charity 14th by Newton Crystal 92658.  
**658 III. (£5.)**—**W. J. AM. MCKEEISTER**, Drakies, Inverness, for **Collyne Lord Violet** 154923' 4, white, born April 4, bred by William D. Collyne, Tarves; *s.* Proud Conqueror 144616, d. Sittown Violet 14th by Clipper Star 124786.  
**671 IV. (£3.)**—**J. M. STRICKLAND**, Baines, Catterick, for **Brandsby's Count** 13th 154212, roan, born Aug. 10; *s.* Ardethen Lavender Knight 140489, d. Brandsby's Tulip 16th by Brandsby's Aristocrat 4th 114242.  
**637 R. N.—HUGH BAKER**, Chedgley, Malvernshire, for **Chedgley Cerasalia**.  
**672 674, 702 I. (Special.)**—**THE HON. MRS. BRUCE WARD**, Godinton, Ashford, Kent, for **Godinton Golden Chance**, **Godinton Welcome**, and **Godinton Grand Duke**.  
**671, 700, 730 II. (Special.)**—**J. M. STRICKLAND**, for **Brandsby's Count** 13th, **Brandsby's Undine King** 2nd, and **Brandsby's Welcome Star**.  
**684, 713, 714 R. N. for Specials.**<sup>2</sup>—**COL. H. T. FENWICK**, Stenigot, Lincoln.  
**H. C.**—662, 663. **C.**—674.

**Class 96.**—*Shorthorn Bulls, calved on or between January 1, 1920, and March 31, 1920.*<sup>1</sup> [29 entries.]

688 **L (£15.)**—**GEORGE HARRISON**, Gainford Hall, Darlington, for **Keir Ramsden**, roan, born Jan. 11, bred by Brig.-Gen. A. Stirling, Keir; *s.* Collyne Nonpareil Knight 141711, d. Keir Rarity (Vol. 64, p. 1385) by Collyne Gondomar 124843.  
**688 II. (£10.)**—**EDWARD SHEPHERD**, Union Bank Buildings, 1 Hatton Garden, London, E.C.1, for **Calrossie Regent**, red, born March 1, bred by Captain J. MacGillivray, Calrossie, Nigg; *s.* D.S.O. 148517, d. Eller (Vol. 63, p. 938) by Millhills Rothes King 138020.  
**704 III. (£5.)**—**F. B. WILKINSON**, Cavendish Lodge, Edwinstowe, Newark, for **Basildon Royalist**, roan, born Jan. 29, bred by Major J. A. Morrison D.S.O., Basildon Park, Beading; *s.* Advocate 11th 132004, d. Basildon Royalist (Vol. 64, p. 1122) by Scarape 128047.  
**702 IV. (£3.)**—**THE HON. MRS. BRUCE WARD**, Godinton, Ashford, Kent, for **Godinton Grand Duke**, roan, born Jan. 25; *s.* Dewar's Royal Sovereign 125170, d. Bilsington Orphan 2nd (Vol. 63, p. 612) by Bilsington Favourite 107898.  
**684 R. N.—COLONEL H. T. FENWICK**, Stenigot, Louth, for **Agricola**.  
**693 R. N.—JAMES OAKES**, Riddings House, Alfreton, for **Lutwyche Crystal**, roan, born March 25, bred by R. Cornelius, Lutwyche Hall, Much Wenlock, Salop; *s.* Scotch Prestige 151963, d. Lutwyche Charity (Vol. 64, p. 819) by Rare Sort 132065.  
**H. C.**—700. **C.**—685.

<sup>1</sup> Prizes given by the Shorthorn Society.

<sup>2</sup> Champion Prize of £20 given by the Shorthorn Society, for the best Bull in Classes 93-97. Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Bull. Special Prizes for the Best Prize, the Second Best Prize, given by the Shorthorn Society for the best bulls of those bulls bred by Exhibitor in Classes 93-97.

<sup>4</sup> Two Special District Prizes were given (I.) £10, by the Shorthorn Society, for the best Bull, (II.) £5, by the Derbyshire Agricultural Society, for the second best Bull, in Classes 96 and 97, the property of Exhibitors residing in Derbyshire. A Silver Medal is given by the Shorthorn Society to the Breeder of the animal winning the £10 District Prize.

lviii      *Awards of Live Stock Prizes at Derby, 1921.*

**Class 97.—Shorthorn Bulls, calved on or between April 1, 1920, and December 31, 1920.** [30 entries.]

722 I. (£15.)—MRS. R. H. LEYLAND, South Carney, Cirencester, for *Carney Oyster*, red roan born April 15; *s.* Edgcote Albion 142205, *d.* Village Blossom (Vol. 63, p. 964) by Village Benham 123423.  
 732 II. (£10.)—WILLIAM B. WHIGHAM, Keythorpe Grange, East Norton, Leicester, for *Badminton Rosebriar*, roan, born April 9, bred by H. Butler, Sutton Benger, Wiltshire; *s.* Bridgebank Historian 141214, *d.* Western Rose 17th (Vol. 58, p. 674) by Adbolton Prince 97770.  
 729 III. (£5.)—MISSES A. F. and M. K. T. SCOTT, Nether Swell Manor, Stow-on-the-Wold, for *Diamond Pierre*, red, born April 21, bred by the late Walter M. Scott, Nether Swell Manor, Stow-on-the-Wold; *s.* Swinton St. Pierre 145820, *d.* Diamond Astraea (Vol. 57, p. 1150) by Diamond Star 01470.  
 728 IV. (£3.)—JOSEPH PUMFREY, Hindley Hall, Stocksfield-on-Tyne, for *Hindley Record*, roan, born April 6; *s.* Augustus Diamond 2nd 118650, *d.* Hindley Miss Ramsden (Vol. 60, p. 1921) by Starlight 107148.  
 704 R. N.—H.R.H. THE PRINCE OF WALES, K.G., Stoke Climsland, Cornwall, for King of the Fairies.  
 H. C.—712.      C.—733.

**Class 98.—Shorthorn Cows, in-milk, calved in or before 1917.** [6 entries.]

736 I. (£15.)—H. R. H. THE DUKE OF CORNWALL, K.G., Marsh Farm, Landulph Hatt, E. Cornwall, for *Alde Floss* (Vol. 61, p. 875), roan, born March 10, 1914, calved April 8, 1921, bred by Captain J. MacGillivray, Calrossie, Nigg; *s.* King's Champion 116104, *d.* Flaxy Jean by Diamond Reward 105264.  
 737 II. (£10.)—G. L. T. BRUDENELL, Deene Park, Peterborough, for *Daisy of Viewfield* (Vol. 64, p. 1036), red, born June 29, 1917, calved Dec. 16, 1920, bred by J. McIntosh, Rothiemay, Scotland; *s.* Cavalier 130102, *d.* Julia B. by Anacreon 113896.  
 739 III. (£5.)—F. EDGE, Gallops Homestead, Ditchling, Sussex, for *Vahan Victress* (Vol. 62, p. 776), roan, born Jan. 9, 1915, calved May 23, 1921; *s.* Collyne Regal Lavender 114770, *d.* Victress 9th by Pride of Clippers 106538.  
 740 R. N.—J. TAYLOR, Octon, Hunmanby S.O., Yorks, for *Lucker Lily* 27th.  
 H. C.—741.

**Class 99.—Shorthorn Heifers, in-milk, calved in 1918.** [7 entries.]

742 I. (£15. & Champion<sup>1</sup>)—J. H. TOPPIN, Musgrave Hall, Skelton, Penrith, for *Mischief* (Vol. 65, p. 1158), white, born Sept. 27, calved Feb. 18, 1921; *s.* Masterkey 137895, *d.* Morris Maid 2nd Baron Fitz Rosebud 94181.  
 747 II. (£10.)—J. H. TOPPIN, for *Bright Princess* (Vol. 65, p. 1157), roan, born May 16, calved Jan. 13, 1921; *s.* Masterkey 137896, *d.* Bright Rose by Midshipman 121584.  
 745 III. (£5.)—L. V. GALLAND, Greenbank, Hayle, Cornwall, for *Hayle Beauty Sleep* 4th (Vol. 65, p. 867), roan, born Nov. 20, calved April 29, 1921, bred by W. J. Hosken, Hayle; *s.* Clipper Comet 135784, *d.* Beauty Sleep by Golden Cloud 105751.  
 746 R. N.—SIR EDWARD NICHOLL & SON, Littleton Park, Shepperton, Middlesex, for *Golden Dorothy*.  
 H. C.—742.

**Class 100.—Shorthorn Heifers, calved in 1919.** [14 entries.]

751 I. (£15. & R. N. for Champion<sup>1</sup>)—G. L. T. BRUDENELL, Deene Park, Peterborough, for *Deene Butterfly* (Vol. 66, p. 537), roan, born Aug. 10; *s.* Cullisse Victor 136030, *d.* Auchanree Moth 21st by Nigel of Cluny 116747.  
 761 II. (£10.)—THE HON. MRS. BARTON WARD, Godinton, Ashford, Kent, for *Billington Rosebud* 11th (Vol. 66, p. 1095), white, born Jan. 12, bred by the Exors. of the late K. J. Balston, Billington Priory, Ashford, Kent; *s.* Dewlap's Royal Sovereign 125170, *d.* Billington Rosebud 7th by Billington Archer 119025.  
 759 III. (£5.)—M. M. STRICKLAND, Balnasse, Catterick, for *Brandsby's Princess* 15th (Vol. 66, p. 1045), roan, born Feb. 4; *s.* Ardlethen Lavender Knight 140439, *d.* Brandsby's Princess by Bapton Judge 82768.  
 755 R. N.—GEORGE HARRISON, Gainford Hall, Darlington, for *Gainford Nouparel Rose*.  
 H. C.—749.  
 754, 773, 792 I. (Special<sup>2</sup>)—C. E. GUNTHORP, Tongswood, Hawkhurst, Kent, for *Tongswood Helens* 4th, *Tongswood Dorothy* and *Tongswood Lavender* 3rd.  
 757, 796, 797 II. (Special<sup>2</sup>)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for *Basildon Rosewood Queen*, *Basildon Orange Blossom*, and *Basildon Rosewood Girl*.  
 739, 768, 787 R. N. for Specials<sup>2</sup>.—S. F. EDGE, Gallops Homestead, Witchling, Sussex.

<sup>1</sup> Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 98-102. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Cow or Heifer.

<sup>2</sup> Special Prizes of £15 First, and £10 Second, given by the Shorthorn Society, for the best groups of three Cows or Heifers, bred by Exhibitor in Classes 98-102.

**Class 101.**—*Shorthorn Heifers, calved on or between January 1, 1920, and March 31, 1920.* [15 entries.]

773 I. (£15).—C. E. GUNTHER, Tongswood, Hawkurst, Kent, for Tongswood Dorothy, roan, born Jan. 8; *s.* Tongswood Bassoon 145942, *d.* Bright Dorothy (Vol. 63, p. 799) by Clipper Star 124796.  
 785 II. (£10).—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for Swinton Maid Ramsden 3rd, roan, born Jan. 14; *s.* Sanguhar Dreadnought 113244, *d.* Maid of Primrose 16th by Notlaw Meteor 96235.  
 775 III. (£5).—THE EARL OF POWIS, Powis Castle, Welshpool, for Powysland Violet 2nd, red, born Jan. 2; *s.* Bapton Fairy Duke 118791, *d.* Sittyton Violet 5th (Vol. 61, p. 677), by Primrose Archer 106551.  
 769 R. N.—J. A. K. FALCONER, Calmorden Manor, Cheltenham, for Sarasm 92nd, H. C.—764, 765. C.—767, 774.

**Class 102.**—*Shorthorn Heifers, calved on or between April 1, 1920, and December 31, 1920.* [25 entries.]

790 I. (£15).—L. V. GARLAND, Greenbank, Hayle, Cornwall, for Towan Gwynne, roan, born May 28; *s.* Christian King 147000, *d.* Hayle Gwynne 12th (Vol. 65, p. 867) by Clipper Comet 135674.  
 796 II. (£10).—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Gorring, Reading, for Basildon Orange Blossom, white, born June 12; *s.* Cluny Sir Augustus 141658, *d.* Orange Blossom 51st (Vol. 64, p. 1044) by Golden Charm 136756.  
 785 III. (£5).—MICHAEL CORNELIUS, Lutwyche Hall, Much Wenlock, Salop, for Lutwyche Charly 3rd, roan, born May 24; *s.* Cluny Mintmaster 147906, *d.* Charity 20th (Vol. 61, p. 753) by Newton Crystal 92358.  
 799 IV. (£3).—OLIVER W. PORRITT, Hotchley, East Leake, near Loughborough, for Hotchley Countess, roan, born Sept. 19; *s.* Sanguhar Grand Courter 139193, *d.* Gipsy Countess 2nd (Vol. 59, p. 881) by Phlogask Comet 109627.  
 781 R. N.—MAJOR CLIVE BEHRENS, Swinton Grange, Malton, for Swinton Fair Rosebud 2nd, H. C.—793. C.—759.

### Dairy Shorthorns.

**Class 103.**—*Dairy Shorthorn Bulls, calved in or before 1918.* [11 entries.]

813 I. (£15, & Champion).—ROBERT N. TORY, Anderson, Blandford, Dorset, for Kelmscott Conjuror 3rd 137530, roan, born June 12, 1916, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; *s.* Kelmscott Acrobat 4th 126217, *d.* Helpmate 15th by Kelmscott Tarquin 105853.  
 808 II. (£10).—CAPTAIN THE HON. E. A. FITZROY, M.P., Fox Hill, West Haddon, Rugby, for John Wild Eyes 149616, white, born Aug. 7, 1918; *s.* Longhills Best Man 137612, *d.* Wrest Wild Eyes by Irby Heirloom 115970.  
 809 III. (£5).—THE RT. HON. SIR ALFRED MOND, Bt., M.P., Melchett Court, Romsey, Hants, for Combebank Baron 145062, roan, born Aug. 16, 1918, bred by R. L. Mond, Combe Bank, Sevenoaks; *s.* Combe Bank Barrington 135830, *d.* Fair Rosamond by Sub-Inspector 100818.  
 807 R. N.—E. ELLA, Lock, Partridge Green, Sussex, for Proud Victor, H. C.—811. C.—805, 812.

**Class 104.**—*Dairy Shorthorn Bulls, calved in 1919.* [14 entries.]

816 I. (£15, & R. N. for Champion).—CHIVERS & SONS, LTD., Histon, Cambridge, for Histon Wild Prince 156497, dark roan, born March 11; *s.* Royal Foggathorpe 133390, *d.* Wild Queen 29th by Dangler Signal 108337.  
 817 II. (£10).—THE EARL OF DERBY, K.G., Knowsley, Prescot, for Knowsley Carol Dolphin 157018, white, born April 20; *s.* Freshute Dolphin 127358, *d.* Stondon Caroline by Pastures General 116839.  
 815 III. (£5).—SIR CHARLES CARRICK ALLOM, Burton Hole Farm, Mill Hill, London, N.W., for Kelmscott Conjuror 28th 156774, roan, born July 7, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; *s.* Kelmscott Acrobat 4th 126271, *d.* Sybil 15th by Royal Proctor 110029.  
 818 R. N.—ROBERT FORTUNE, Newhouse, Cranleigh, Surrey, for Newhouse Snow King, H. C.—821, 824. C.—814, 819.  
 816, 871, 893 (Cup<sup>2</sup>).—CHIVERS & SONS, LTD., for Histon Wild Prince, River Meadow Pippit 4th, and Histon Wild Queen.  
 849, 904, 905 (R. N. for Cup<sup>3</sup>).—CAPT. ARNOLD S. WILLS, Thornby Hall, Northampton, for Thornby Prime Minister, Newborough Fragrance 3rd, and Thornby Foggathorpe 7th.

<sup>1</sup> Champion Prize of £10 given by the Dairy Shorthorn Association for the best Bull in Classes 103-106.

<sup>2</sup> Silver Challenge Cup, value 100 guineas, given through the Dairy Shorthorn Association for the best group of one Bull and two Cows or Heifers in Classes 103-110. Two at least of the animals must have been bred by the Exhibitor.

**Class 105.—Dairy Shorthorn Bulls, calved on or between January 1, 1920, and March 31, 1920.<sup>1</sup> [11 entries.]**

832 **I. (£15.)**—CHIVERS & SONS, LTD., Histon, Cambridge, for *Histon Baron Lee*, roan, born Jan. 20; *s.* Royal Foggatherope 135300, *d.* Dame Lee (Vol. 57, p. 1261) *by* Royal Pluto 13th 100462.

833 **II. (£10.)**—MRS. J. G. WRIGHT, Walton Park, Lancaster, for *Beauty's Pride*, light roan, born Feb. 18, bred by Mr. J. G. Wright, Halton Park; *s.* Gainford Full Capacity 143976, *d.* Bantock 16th (Vol. 57, p. 574) *by* Candidate 108100.

834 **III. (£5.)**—CAPT. THE HON. E. A. FITZROY, M.P., Fox Hill, West Haddon, Rugby, for *Foxhill Springtime*, dark roan, born Jan. 31; *s.* Afterthought 146582, *d.* Telluride May 4th (Vol. 62, p. 1101) *by* Gerome of Highfields 98918.

835 **R. N.—JOHN A. WILLIS**, Manor House, Carperby, Yorks, for *Royal Ringleader*.  
H. C.—830. C.—833, 836.

**Class 106.—Dairy Shorthorn Bulls, calved on or between April 1, 1920, and December 31, 1920. [11 entries.]**

849 **I. (£15.)**—CAPTAIN ARNOLD S. WILLS, Thornby Hall, Northampton, for *Thornby Prime Minister*, white, born April 4; *s.* Drusus 115142, *d.* Dolphulhee Primrose (Vol. 58, p. 777) *by* Border Victor 101600.

850 **II. (£10.)**—T. H. BINGLEY, Whitley Hall, Grenoside, Sheffield, for *Whitley Earl Grey*, roan, born Nov. 16; *s.* Playford Earl Grey 151064, *d.* Lucy Ringlet 20th (Vol. 64, p. 1186) *by* Puddington Rosador 117150.

851 **III. (£5.)**—CAPT. THE HON. E. A. FITZROY, M.P., Fox Hill, West Haddon, Rugby, for *Foxhill Prince Pearl*, red, born April 15; *s.* Afterthought 146582, *d.* Rosy Queen 2nd (Vol. 61, p. 1060) *by* General Watson 108720.

840 **R. N.—H. A. BROWN**, Croft House, Grendon, Atherstone, for *Grendon John Thomas*.  
C.—842, 848.

**Class 107.—Dairy Shorthorn Cows (in-milk), calved in or before 1914.<sup>2</sup> [18 entries.]**

851 **I. (£15.)**—H. A. BROWN, Croft House, Grendon, Atherstone, for *Johny Rose 18th* (Vol. 61, p. 1124), red, born Sept. 2, 1914, calved June 5, 1921, bred by T. W. Workman, Carlton, Carlisle; *s.* County Squire 111410, *d.* Johny Rose 11th *by* Bouncing Boy 94305.

857 **II. (£10.)**—CAPT. THE HON. E. A. FITZROY, M.P., Fox Hill, West Haddon, Rugby, for *Lady Nottingham 26th* (Vol. 61, p. 990), roan, born April 28, 1914, calved June 4, 1921, bred by A. Kitson, Hawkridge House, Wigton; *s.* Daisy Ingram 105134, *d.* Lady Nottingham 14th *by* York Rose 93950.

853 **III. (£5.)**—J. L. CROSS, Catthorpe, Rugby, for *Bonny Clara* (Vol. 61, p. 669), roan, born Aug. 16, 1914, calved May 29, 1921, bred by R. Cook, Rossall Grange, Fleetwood; *s.* Pansy's Pride 112745, *d.* Lady Clara 3rd *by* Adholton Banker 90601.

867 **R. N.—CAPTAIN H. FITZHERBERT WRIGHT**, Yeldersley Hall, Ashbourne, for *Yeldersley Red Rose 4th*.

**Class 108.—Dairy Shorthorn Cows (in-milk), calved in 1915 or 1916.<sup>2</sup> [19 entries.]**

875 **I. (£15. & R. N. for Champion<sup>3</sup>)**—W. G. MILLAR, Hampton, Oxon, for *Aughton Lauretina 3rd* (Vol. 63, p. 1090), roan, born June 14, 1916, calved April 12, 1921, bred by Ellis Potter, Moor Hall, Ormskirk; *s.* Scarborough 128048, *d.* Aughton Lauretina *by* Newton Enterprise 106332.

868 **II. (£10.)**—HENRY BUCKICK, Standeford, Four Ashes, Wolverhampton, for *Standeford Dolly 23rd* (Vol. 62, p. 655), red and white, born Oct. 26, 1915, calved April 12, 1921; *s.* Baby Bugler 117169, *d.* Standeford Dolly 9th *by* Chesty Marquis 114687.

871 **III. (£5.)**—CHIVERS & SONS, LTD., Histon, Cambridge, for *River Meadow Pippit 4th* (Vol. 63, p. 737), roan, born July 28, 1916, calved May 20, 1921; *s.* Gipsy Lad 125702, *d.* River Meadow Pippit 2nd *by* Lord Kingshorpe 109230.

870 **R. N.—MAJOR GERALD J. BUXTON**, Tockenham Manor, Wootton Bassett, Wilts, for *Asley Seraphina 6th*.  
H. C.—873. C.—879, 884.

**Class 109.—Dairy Shorthorn Heifers (in-milk), calved in 1917. [22 entries.]**

898 **I. (£15. & Champion<sup>4</sup>)**—CHIVERS & SONS, LTD., Histon, Cambridge, for *Histon Wild Queen* (Vol. 64, p. 803), red, born Sept. 2, calved May 8, 1921; *s.* Histon Milkman 131488, *d.* Aultford 54th *by* Dauntless 111497.

908 **II. (£10.)**—VICOUNT WIMBORNE, Ashby St. Ledgers, Rugby, for *Ruby Rosette* (Vol. 64, p. 1120), dark roan, born Jan. 27, calved June 17, bred by J. Moffat, Spital, Kendal; *s.* Royal Prince 127837, *d.* Red Rosette *by* Coronation Count 114819.

<sup>1</sup> Prizes given by the Dairy Shorthorn Association.<sup>2</sup> Prizes given by the Shorthorn Society.<sup>3</sup> Champion Prize of £10 given by the Shorthorn Society for the best Cow or Heifer in Classes 107-110. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Dairy Shorthorn Cow.

906 **III.** (55.)—**VISCOUNT WIMBORNE**, for **Golden Ruby** (Vol. 64, p. 1110), roan, born Aug 17, calved June 17, bred by J. Moffat, Spital, Kendal; *s.* **Golden Star** 131255, *d.* **Water Crook Ruby** by **Lord Nottingham** 116317.  
**R. N.**—**CAPTAIN ARNOLD S. WILLS**, Thornby Hall, Northampton, for **Thornby Foggarth** 714.  
**H. C.**—885, 895, 903, 904. **C.**—889, 891, 892, 894, 896, 897, 898, 899, 900, 901, 902, 907.

**Class 110.—Dairy Shorthorn Heifers (in-milk), calved in 1918.** [39 entries.]  
929 **I.** (£15.)—F. W. MORLEY, Biddestone Manor, Chippenham, for **Loobagh Fragrance** (Vol. 65, p. 806), red and little white, born Sept. 24, 1918, calved May 5, 1921, bred by Sir John Morley, 1st Bt., M.P., of Coates, Kilnwick, York; *s.* **Lord Nottingham** 3rd 132998, *d.* **Northbridge Fragrance** 2nd by **Oxford Champion** 8, 165635.  
926 **II.** (£10.)—W. G. MILLAN, Bampton, Oxon, for **Combebank Coral** (Vol. 65, p. 973), dark roan, born June 12, calved May 24, 1921, bred by R. L. Mond, Combe Bank, Sevenoaks; *s.* **Foundation Stone** 105524, *d.* **Coral Belle** by **Merry Lorn** 103046.  
941 **III.** (25.)—**THE DUKE OF WESTMINSTER**, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Bar Lily** 3rd (Vol. 65, p. 815), red and little white, born Jan. 29, calved June 13, bred by R. Hall, Torrisholme Hall, Morecambe; *s.* **Bare Record** 129415, *d.* **Bare Lily** by **Lunesdale Prospect** 100608.  
913 **IV.** (23.)—**GEORGE BICKFORD**, Somerford, Brewood, Staffs, for **Somerford Kirklevington** 2nd (Vol. 65, p. 610), roan, born Sept. 25, calved May 10, 1921; *s.* **Kingsthorpe Dreadnought** 137391, *d.* **Somerford Kirklevington** by **Raby Bugler** 117169.  
943 **R. N.**—**CAPTAIN ARNOLD S. WILLS**, Thornby Hall, Northampton, for **Thornby Lady York** 3rd.  
**H. C.**—914, 928, 946. **C.**—919, 932, 933, 935, 937.

### Non-Pedigree Dairy Shorthorns.

**Class 111.—Non-Pedigree Shorthorn Dairy Cows (in-milk).<sup>1</sup>** [5 entries.]  
948 **I.** (£15.)—D. ALDRIDGE, Sketchley Hall Farm, nr. Hinckley, for **Sketchley Sapphire** (Vol. 3), red, age and breeder unknown, calved May 10, 1921.  
951 **II.** (£10.)—**CAPTAIN THOMAS W. HAY**, Flaxley, Heref., for **Flaxley Slough**, for **Penn Primrose**, (Vol. 65), roan, age and breeder unknown, calved March 16, 1921.  
952 **III.** (£5.)—**STICKLAND**, Baines, Catterick, for **Dairymaid** 3rd (Vol. 3), dark roan, born March 12, 1912, calved April 28, 1921, bred by E. Peacock, Tryton, Slingsby, York; *s.* **Ringleader** 106774, *d.* **Dairymaid** 2nd by **Richeote** 100289.

### Lincolnshire Red Shorthorns.

**Class 112.—Lincolnshire Red Shorthorn Bulls, calved in or before 1918.** [7 entries.]

959 **I.** (£15, & Champion.)—W. A. HARRISON, The North Lodge, Harlaxton, Grantham, for **Horkstowian Premier** 14693, born Jan. 3, 1918, bred by E. J. Turton, Horkstow, Hull; *s.* **Welbourne Victorious** 12145, *d.* **Horkstowian Maiden** by **Marshman** 7th 9193.  
955 **II.** (£10, & R. N. for Champion.)—GEORGE COLEMAN, Wood Walton, Peterborough, for **Horkstowian** **Onyx** 13565, born April 3, 1917, bred by E. J. Turton, Horkstow, Hull; *s.* **Horkstowian Liberator** 10784, *d.* by **Croft Cayhurst** 5959.  
954 **III.** (25.)—FRANK BOURNE, Croxton House, nr. Brocklesby, Lincs, for **Scampton Result** 12879, born in May, 1916, bred by G. E. Sanders, Scampton, Lincoln; *s.* **Anderby Pilot** 5793, *d.* by **Brandon Grenadier** #274.  
957 **R. N.**—THOMAS DICKINSON, Bonby, Brigg, for **King John**.  
**H. C.**—963, 958.

**Class 113.—Lincolnshire Red Shorthorn Bulls, calved in 1919.** [6 entries.]

961 **I.** (£15.)—O. W. PORKITT, Helmshore, near Manchester, for **Pendley Ruby Magnate** 15697, born July 15, bred by Pendley Stock Farms, Tring; *s.* **Scampton Quality** 11912, *d.* **Southgate Ruby** 20th by **Blucher** of Wick 94361.  
965 **II.** (£10.)—**LT-COL. SIR A. G. WEIGALL**, K.C.M.G., Patwood, Woodhall Spa, Lincs, for **Kirmington Ruby** King 63rd 13589, born June 5, bred by G. Morris, Kirmington, Brocklesby, Lincoln; *s.* **Scampton Result** 12879, *d.* **Kirmington Rose** 41st by **Kirmington Wandering Chief** 6182.  
963 **III.** (25.)—J. B. RIGGALL, Langton Grange, Spilsby, for **Kirmington Coombe Ruby King** 15579, born April 1, bred by G. Morris, Kirmington, Brocklesby; *s.* **Scampton King of the Rubies** 7122, *d.* **Normandy Dairy Maid** by **Scampton Lucitamus** 7875.  
964 **R. N.**—**BUTLER SMITH**, The Pleds, Cropwell Butler, Nottingham, for **Ruby General**.  
**H. C.**—960, 961.

<sup>1</sup> Prizes given by the Dairy Shorthorn Association.

<sup>2</sup> Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 112-114.

Class 114.—*Lincolnshire Red Shorthorn Bulls, calved in 1920.*<sup>1</sup> [13 entries.]

988 L. (£1.00) — RONWALL F. AUBREY, Weybridge, Ellington, Hunts, for Weybridge Pendle Chancellor 1713/23, born Feb 4, buried at the Pendle Stock Farms, Tring; s. Scampton Quality 11912, d. Queen's Flower by Flower King 4818.

970 H. (£1.00) — GEORGE COLEMAN, Wood Walton, Peterborough, for Wood Walton Prince, born April 10; s. Horkstowman Onyx 13565, d. Deeping Dolly 2d by Scampton Marty 8518.

969 III. (£5.00) — GEORGE COLEMAN, for Wood Walton Bombardier, born June 18; s. Horkstowman Onyx 13565, d. Wood Walton Dorothy by Kilsley Hernil 10819.

977 R. N. — J. B. BIGGALL, Langton Grange, Spilsby, for Candlesby Freehold. H. C.—972, 971.

**Class 115.—Lincolnshire Red Shorthorn Cows or Heifers (in-milk), calved in or before 1918. [8 entries.]**

983 L. (15).—**A. PRESTON JONES**, Mickleover House, nr. Derby, for *Bletchley Epona* (Vol. 20, p. 297), born June 12, 1912, calved Feb. 10, 1921, bred by F. W. Wilkinson, Edwinstowe, Newark; *s. Scampton King* of the Valley 7123, d. Domnington Crawley by *Lord Chancellor* 1606.

984 H. (16).—**MAJOR H. COOPER**, Flawborough, Orton, Notts, for *Flawborough Nancy* (Vol. 20, p. 297), born July 11, 1912, calved Feb. 20, 1922, bred by Flawborough Cheltenham 15514, d. *Flawborough Princess* by *High Tington Coronation* 8332.

979 III. (15).—**ADMIRAL ERAL BEATTY**, Brookby Hall, Leicester, for *Brookby Wanton* Zs., born March 20, 1917, calved June 12; *s. Normandy Radiance* 10932, d. Pendley Wanton 3rd (Vol. 17, p. 278) by *Bonby Excursionist* 4th 5161.

988 R. N.—**LT.-COL SIR A. G. WEIGALL**, K.C.M.G., Petwood, Woodhall Spa, for *Kitmington Maple Leaf*.  
H. C.—951, 952, 954.

**Class 116.—Lincolnshire Red Shorthorn Cows or Heifers (in-milk), calved in 1918, showing the best milking properties.<sup>1</sup> [14 entries.]**

**Class 117.—Lincolnshire Red Shorthorn Heifers, calved in 1919. [13 entries.]**

1007 I. (15, & R. N. for Champion.)—THOMAS H. B. FRESHNEY, Worlaby, Brigg, for Clefless Red Rose (Vol. 27), born July 24; *a.* Cockerington Hallington 2nd 11437, *d.* by Croxton Ruby 5th 9803.

1013 II. (10, & Lt.-Col. Sir A. G. WIGGINS, K.C.M.G., Petwood, Woodhall Spa, for Petwood Counter)—(15, & 4583), born July 11; *a.* Croxton Count 6th 12423, *d.* Atherley Kingbird by Thimbleby Warbler 7351.

1008 III. (16, —)—MISSES E. M. and S. M. GRANTHAM, The Rockery, West Keal, Sleaford, for Keal Cherry 29th, born April 13; *a.* Hanby Dux 12563, *d.* Keal Cherry 20th by Keal Rascel 8360.

1006 R. N.—MAJOR H. COOPER, Flawborough, Orston, Notts, for Flawborough Perfection. H. C.—1012. C.—1002, 1010.

Class 118.—*Lincolnshire Red Shorthorn Heifers, calved in 1920.*<sup>1</sup> [18 entries.]

1022 L. (15)—W. A. HARRISON, The North Lodge, Harlaxton, Grantham, for Harlaxton Andrey, born March 31; *s.* Worksopshire Premier 14605, d. Harlaxton Deeping Princess by Decaying Cuir Coué End 10639.

1023 H. (10)—MAJOR T. JESSOP, Harrington Hall, Spilsby, for Harrington Amba, born April 28; *s.* Scampton Quadynt 15510, d. Redian 43rd (Vol. 26, p. 306) by Saltfleet Ruby Prince 1024 H. (11)—MAJOR T. JESSOP, for Harrington Amba, born Jan. 30; *s.* Sixwold Prince 1026 III. (5)—MAJOR T. JESSOP, for Harrington Amba, born Jan. 30; *s.* Sixwold Prince 1026 (d. Randy Lilley (Vol. 26, p. 368) by Randy Hallington 8474.

1021 R. N.—MISS E. M. and S. M. GRANTHAM, The Rookery, West Keal, Spilsby, for Keal Faith.

H. C.—1017, 1018, 1023, 1027, 1028.

<sup>1</sup> Prizes given by the Lincolnshire Red Shorthorn Association.

\* Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 115-118.

**Herefords.**

**Class 119.—Hereford Bulls, calved in or before 1918.** [5 entries.]

1038 I. (£15, & Champion.)—**STEWART ROBINSON**, The Ovals, Kington, Herefordshire, for Mansel Handiman 33954, born Jan. 11, 1916, bred by Capt. B. T. Hincks, Mansel Lacy, Hereford; *s.* Starlight 28754, *d.* Dame Rhondda by Eaton Pearl 28830.  
 1039 II. (£10.)—**His MAJESTY THE KING**, Royal Farms, Windsor, for **Sir Edward** 38056, born Jan. 30, 1918; *s.* Paymaster 32802, *d.* Sunray by Broadward Royalty 28965.  
 1040 III. (£5.)—**THE EARL OF COVENTRY**, Croome Court, Severn Stoke, Worcester, for Bunker 33932, born Jan. 14, 1918; *s.* Maddenstown 33922, *d.* Balloon by Giltfinger Gold 24628.

**Class 120.—Hereford Bulls, calved in 1919.** [10 entries.]

1042 I. (£15.)—**KENNETH W. MILNES**, The Field, Hereford, for Larder 37146, born Jan. 7; *s.* Phoenix 32623, *d.* Nachester by Sir James 26489.  
 1043 II. (£10.)—**J. K. HYSLOP**, Irwington, Leominster, for Irwington Ranger 37015, born Jan. 15; *s.* Newton Division 32840, *d.* Pipe 4th by Rougemont 30296.  
 1046 III. (£5.)—**H. WESTON & SONS**, The Bounds, Much Marcle, Dymock, Hereford, for Bounds Justice 36106, born March 16; *s.* Conquest 32933, *d.* Dorcas by Morocco 27051.  
 1048 R. N.—**SYDNEY PYMAN**, Pigeon House, Ross-on-Wye, for Silver Shred. H. C.—1088.

**Class 121.—Hereford Bulls, calved in January, 1920.** [21 entries.]

1065 I. (£15, & R. N. for Champion.)—**THOMAS ROE THOMPSON**, Bean House Farm, Cradley near Mulver, for Research 39894, born Jan. 22, bred by the Exors. of the late T. R. Thompson, Bean House Farm, Cradley; *s.* Resolute 35537, *d.* Beauty 9th by Lee Vista 31564.  
 1055 II. (£10.)—**MAJOR DAVID DAVIES**, M.P., Bronefrion, Llanddum, Mont., for **Resolute** II, born Jan. 11, bred by the Exors. of the late T. R. Thompson, Bean House Farm, Cradley; *s.* Resolute 35537, *d.* Beauty 5th (Vol. 43, p. 992) by Twyford Sultan 25845.  
 1068 III. (£5.)—**CHARLES H. TINSLEY**, Twyford, Pembridge, for Twyford Fairy Boy, born Jan. 16; *s.* Bounds Investment 36087, *d.* Fairy Girl 3rd by Sir Albert 33126.  
 1052 R. N.—**LORD CAWLEY**, Berington Hall, Leominster, for Coniston. H. C.—1083, 1089, 1082. C.—1048, 1049.

**Class 122.—Hereford Bulls, calved in February, 1920.** [9 entries.]

1072 I. (£15.)—**NEWMAN BROTHERS**, Lower Wickton, Leominster, for Wickton Gipsy Chief, born Feb. 1; *s.* Patchwork 34009, *d.* Gipsy 2nd (Vol. 43, p. 650) by Eaton Baronet 24000.  
 1068 II. (£10.)—**LOD CAWLEY**, Berington Hall, Leominster, for Aldersend Concrete 38463, born Feb. 1, bred by W. Griffiths, Aldersend, Tarrington, Herefordshire; *s.* Aldersend Wilton 34542, *d.* Comfort by Royal Oyster 30993.  
 1076 III. (£5.)—**H. H. WESTON & SONS**, The Bounds, Much Marcle, Herefordshire, for Bounds Alpine 38636, born Feb. 2; *s.* Alders Protector 34537, *d.* Merry Lass by Buckland Captain 26708.  
 1069 R. N.—**W. T. COOKS**, Brook House, Kings Pyon, Wrobley, Herefordshire, for Corporal. H. C.—1070, 1076. C.—1073, 1074.

**Class 123.—Hereford Bulls, calved in 1920 on or after March 1.** [20 entries.]

1079 I. (£15.)—**GEORGE HENRY DUNMOR**, Pitsford Hall, Northampton, for Lancer of Pittford 30423, born Mar. 7; *s.* Sir Sam 33131, *d.* Lavone by Eaton Royalist 31446.  
 1069 II. (£10.)—**MAJOR N. S. WILSON**, Norton Grange, Malmesbury, for Plumstone, born Mar. 9; *s.* Worcester 36270, *d.* Plum 7th (Vol. 47, p. 239) by Sailor Prince 28465.  
 1095 III. (£5.)—**OWEN WILLIAMS**, Crossways, Cowbridge, for Crossways Chief 39910, born Mar. 9; *s.* Bodenham Gallant 34638, *d.* Hollybush by Hollybush David 31587.  
 1086 R. N.—**NEWMAN BROTHERS**, Lower Wickton, Leominster, for Wickton Beauty. H. C.—1085, 1092, 1094.

**Class 124.—Hereford Cows or Heifers (in-milk), calved in or before 1918.**

[8 entries.]

1103 I. (£15, & R. N. for Champion.)—**CHARLES H. TINSLEY**, Twyford, Pembridge, for Ruby 2nd (Vol. 47, p. 200), born May 20, 1912, calved Nov. 6, 1920, bred by E. M. Hopton; *s.* Resolute 35537, *d.* Dorothy by Whittier Standard 21124.  
 1097 II. (£10.)—**DAVID PERCIVAL BAXTER**, Danysgraig, Newton, Porthcawl, S. Wales, for Dolaseone, born Mar. 20, 1918, calved Jan. 22, 1921, bred by Viscount Rhondda, Llanwern Park, Mon.; *s.* Sir Sam 33131, *d.* Dorothy 4th (Vol. 47, p. 415) by Brampton Dictator 28071.

<sup>1</sup> Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 119-123.

<sup>2</sup> Prizes given by the Hereford Herd Book Society.

<sup>3</sup> Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 124-126.

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1104 **III. (£5.)**—CHARLES H. TINSLEY, for *Wise Money* (Vol. 46, p. 1043), born Feb. 16, 1914, calved Jan. 21, 1921, bred by William Whiteman, The Hyde, Leominster; *s.* Even Money 28281, *d.* Sally Wise by Shucknall Royal 27220.

1105 **R. N.**—CECIL ROWE ENGLISH, Evesbatch Court, Bishop's Frome, for *Rarity*.  
**H. C.**—1101.

**Class 125.—Hereford Heifers, calved in 1919.** [6 entries.]

1108 **I. (£15.)**—J. A. HILL, Orleton Manor, R.S.O., Herefordshire, for *Orleton Mystery* (Vol. 50, p. 604), born Mar. 30, bred by J. R. Hill & Son, Orleton Manor; *s.* Newton Monser 34060, *d.* Mystery (Vol. 47, p. 644) by Bendigo 25140.

1105 **II. (£10.)**—HIS MAJESTY THE KING, Royal Farms, Windsor, for *Laurel* (Vol. 50, p. 359), born Jan. 20; *s.* Paymaster 32892, *d.* Linnet (Vol. 38, p. 302) by Marmon 20844.

1106 **III. (£5.)**—DAVID PERCIVAL BARNETT, Danygraig, Newton, Porthcawl, for Wallerton Boadicea, born Jan. 18; *s.* Sir Sam 33131, *d.* Boadicea (Vol. 48, p. 907) by Caudade 24485.

1109 **R. N.**—MRS. M. E. Gwynne HOLFORD, Buckland, Bwlch, for *Glestone Lottery*.

**Class 126.—Hereford Heifers, calved in 1920.** [22 entries.]

1124 **I. (£15. & Champion<sup>1</sup>)**—W. H. JONES, Brook Farm, Lyonshall, Herefordshire, for *Brookman*, born Jan. 1; *s.* Marlborough 35293, *d.* Beauty (Vol. 28, p. 720) by Protestant 27124.

1113 **II. (£10.)**—GEORGE HENRY DRUMMOND, Pitsford Hall, Northampton, for *Primrose of Pitsford*, born Jan. 2; *s.* Sir Sam 33131, *d.* Pansy (Vol. 50, p. 481) by Scout 25754.

1126 **III. (£5.)**—KENNETT W. MILNES, The Field, Hereford, for *Stanway Neckchain* 3rd, born Jan. 25; *s.* Hermit 32602, *d.* Neckchain (Vol. 50, p. 720) by Sir James 26183.

1119 **R. N.**—CECIL ROWE ENGLISH, Evesbatch Court, Bishop's Frome, for *Rose Curly*.  
**H. C.**—1115, 1122.      C.—1116, 1117, 1127, 1130, 1132.

**Devons.**

**Class 127.—Devon Bulls, calved in or before 1919.** [4 entries.]

1133 **I. (£15. & Champion<sup>2</sup>)**—ELIAS CLATWORTHY, Cutsey Trull, nr. Taunton, for *Overton Gold* 9140, born July 13, 1916, bred by J. L. Huxtable, Overton, Bishop's Tawton, Barnstaple; *s.* Overton Gold Ring 8813, *d.* Overton Myrtle 2nd 25912 by Stockleigh Masterpiece 6548.

1134 **II. (£10. & R. N. for Champion<sup>3</sup>)**—S. J. COWING & SONS, Hugheblade, Okelhampton, for *Overton Gold* 2nd 10233, born May 9, 1918, bred by Mrs. J. L. Huxtable, Bishop's Tawton; *t.* Captain Butterman 9186, *d.* Overton Myrtle 25912 by Stockleigh Masterpiece 6548.

1135 **III. (£5.)**—JOHN LEWIS, Westcott Farm, Burlescombe, Wellington, Somerset, for *Westcott Leader* 10381, born Nov. 21, 1917; *s.* Holcombe Emperor 8942, *d.* Rentfunder 9th 29305 by Gotton Herald 8069.

1136 **R. N.**—CHARLES MORRIS, Highfield Hall, St. Albans, for *Highfield Enterprise*.

**Class 128.—Devon Bulls, calved in 1920.** [8 entries.]

1141 **I. (£15.)**—CHARLES MORRIS, Highfield Hall, St. Albans, for *Highfield Blue Blood* 11049, born March 7; *s.* Highfield Gen 8nd 9329, *d.* Mangold 9th 25505 by Compton Douglas 57303.

1137 **II. (£10.)**—HIS MAJESTY THE KING, Royal Farms, Windsor, for *Windsor President* 11297, born Feb. 3; *s.* Windsor Captain 8325, *d.* Windsor Care 29710 by Noble Lad 8600.

1139 **III. (£5.)**—JOHN H. CHUCK, Wyndford Eagle, Dorchester, for *Cutsey Rubber* 10977, born Mar. 31, bred by Eland Clatworthy, Cutsey Trull, Taunton; *s.* Overton Goldenvan 9410, *d.* Stratton Rubble 25547 by Captain Harold 4728.

1142 **R. N.**—CHARLES MORRIS, Lydeard Farm, Bishop's Lydeard, for *Highfield Romance*.  
**H. C.**—1138, 1140.      C.—1143.

**Class 129.—Devon Cows or Heifers (in-milk), calved in or before 1918.** [4 entries.]

1147 **I. (£15. & Champion<sup>4</sup>)**—CHARLES MORRIS, Lydeard Farm, Bishop's Lydeard, for *Highfield Farthing* 8th 20398, born Dec. 26, 1910, calved April 22, 1921; *s.* Highfield Genera 8105, *d.* Highfield Farthing 5th 26925 by Captain Belgrave 4011.

1149 **II. (£10. & R. N. for Champion<sup>5</sup>)**—CHARLES MORRIS, Highfield Hall, St. Albans, for *Highfield Fairmaid* 2nd 29693, born Feb. 24, 1916, calved Feb. 24, 1921; *s.* Holcombe Reminder 7413, *d.* Fairmaid 25464 by Cronje 5470.

1145 **III. (£5.)**—L. H. ALFORD & SON, Horridge, Ashford, Barnstaple, for *Primrose* 3r 29722, born June 13, 1917, calved Jan. 1, 1921; *s.* Stockleigh Twin 1st 8674, *d.* Primros 1st 27271 by Horridge Chief 7415.

1148 **R. N.**—ALFRED POPE, Bentstell, Sandford, Crediton, for *Sandford Curly* 8th.

<sup>1</sup> Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Co or Heifer in Classes 124-126.

<sup>2</sup> Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bt in Classes 127 and 128, entered or eligible for entry in the Devon Herd Book.

<sup>3</sup> Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Co or Heifer in Classes 129-132, entered or eligible for entry in the Devon Herd Book.

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**Class 130.—Devon Dairy Cows or Heifers (in-milk), calved in or before 1918.<sup>1</sup>** [4 entries.]

1151 I. (£15.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for **Wynford Pill** C. 292, born July 23, 1913, calved May 14, 1921; *s.* Compton Moses 7015, *d.* Wynford Pink B. 363 by Compton Battler 6309.  
 1152 II. (£10.)—N. D. LUPTON, Chalmington, Dorchester, for **Compton Glitter** 3rd 30838, born Dec. 13, 1914, calved Mar. 23, 1921, bred by W. D. Chick, Compton Valence, Dorchester; *s.* Compton Doctor T. 985, *d.* Compton Glitter 2nd (C) by Wyndthorpe Wood-rose 6309.  
 1150 III. (£5.)—W. G. BUSK, Wroxall Manor, Dorchester, for **Suffragette** 1st 26561, born Feb. 1, 1913, calved May 30, 1921, bred by R. A. Clarke, Chiselborough; *s.* Rainbow Goodman 6888, *d.* Suffragette.

**Class 131.—Devon Heifers, calved in 1919.** [6 entries.]

1157 I. (£15.)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Golden Cup** 5th 32176, born April 27; *s.* Highfield Gem 3rd 9690, *d.* Highfield Golden Cup 2nd 29401 by Highfield General 8105.  
 1155 II. (£10.)—ELIAS CLATWORTHY, Cutsey, Trull, Tawnton, for **Cutsey Browney** 31771, born Mar. 29; *s.* Overton Goldwin 9410, *d.* Brown 4th, C. 293 by Cutsey Gabriel 7034.  
 1158 III. (£5.)—L. H. ALFORD & SON, Horridge, Ashford, Barnstaple, for **Horridge Prim** 31599, born May 7; *s.* Horridge Toby 9723, *d.* Primrose 1st 27271 by Horridge Chief 7415.  
 1154 IV. (£5.)—W. BRENT & SON, Clampit, Callington, Cornwall, for **Clampit Gay Lass** 13th and 14th.

**Class 132.—Devon Heifers, calved in 1920.** [5 entries.]

1162 I. (£15.)—CHARLES MORRIS, Lydeard Farm, Bishops Lydeard, for **Highfield Lottie** 3rd 33158, born Feb. 18; *s.* Highfield Gauge 0089, *d.* Highfield Lottie 27767 by Longiforth Mailbag 7430.  
 1161 II. (£10.)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Handsome** 32155, born Feb. 27; *s.* Highfield Gent 10120, *d.* Handsome 2nd 26176 by Captain Beano 6285.  
 1160 III. (£5.)—W. BRENT & SON, Clampit, Callington, Cornwall, for **Clampit Gay Lass** 14th 32562, born June 1; *s.* Highfield Gem 8919, *d.* Clampit Gay Lass 6th 27309 by Ford Plumper 7381.

**South Devons.**

**Class 133.—South Devon Bulls, calved in or before 1919.** [5 entries.]

1167 I. (£15. & Champion.<sup>2</sup>)—BEN LUSCOMBE, Bowden, Yealmpton, for **Bowden Strawberry Boy** 6984, born Jan. 1, 1917; *s.* Coarswell Yellow Boy 4014, *d.* Strawberry 2nd 11741.  
 1168 II. (£10. & R. N. for Champion.<sup>3</sup>)—MOSEY WROTH, Coombe, Holbeton, Plymouth, for **Mothecombe Milkman** 7245, born Jan. 29, 1917; *s.* Brownstone Laddle 4774, *d.* Kitty 11346 by Mersdale Paymaster 3491.  
 1165 III. (£5.)—R. W. CHAFFE, Worswell Barton, Revelstoke, Devon, for **Worswell Gladiator** 7500, born March 26, 1917; *s.* Frothister 5423, *d.* Gladys 5409 by Juryman 1165.  
 1164 R. M.—GEORGE BANBURY, Stanton Barton, Marldon, Paignton, Devon, for **Granby**.

**Class 134.—South Devon Bulls, calved in 1920.** [3 entries.]

1169 I. (£15.)—R. W. CHAFFE, Worswell, Barton, Revelstoke, Devon, for **Worswell Bill**, born June 21; *s.* Widland Champion 6874, *d.* Worswell Betty 16472 by Pamflete Dairyman 4609.  
 1170 II. (£10.)—COL. THE RIGHT HON. F. B. MILFORD, M.P., Flete, Ivybridge, for **Flete Champion**, born Feb. 14; *s.* Random 7815, *d.* Lilly 8th 15324 by Lillian's Champion 8016.  
 1171 III. (£5.)—J. S. STANLEY WROTH, Coombe, Aveton Gifford, Devon, for **Coombe Hero**, born Jan. 4; *s.* Sentinel 7844, *d.* Matilda 9th 19264 by Lillian's Champion 8016.

**Class 135.—South Devon Cows or Heifers (in-milk), calved in or before 1918.** [7 entries.]

1177 I. (£15.)—ROBERT SHINNER, Strechford, Buckfastleigh, Devon, for **Altee** 20507, born May 14, 1918, calved Oct. 31, 1920; *s.* Molenick Monarch 4979, *d.* Careless 15964 by Well Bred 4647.  
 1175 II. (£10.)—R. W. CHAFFE, Worswell Barton, Revelstoke, Devon, for **Worswell Profit** 16478, born July 24, 1916, calved March 3, 1921; *s.* Pamflete Dairyman 4509, *d.* Worswell Primrose Girl 11386 by Peter the Piper 3842.  
 1175 III. (£5.)—BEN LUSCOMBE, Bowden, Yealmpton, for **Tansy** 2nd 12117, born Feb. 24, 1912, calved May 11, 1921, bred by C. G. Tucker, Mole Nick, St. Germans; *s.* Cherry Tring 8111, *d.* Tansy 8769.  
 1174 R. M.—WALTER HUNT, Tracey's Farm, Berry Pomeroy, Totnes, for **Milkmaid 4th**.

<sup>1</sup> Prize given by the Devon Cattle Breeders' Society.

<sup>2</sup> Special Prize of £10 10s. First and £5 5s. Second given through the Devon Cattle Breeders' Society for the best Cows or Heifers in Classes 129-132, the property of an Exhibitor who has not shown at previous shows of the R.A.S.E.

<sup>3</sup> Silver Challenge Cup value £20, given through the South Devon Herd Book Society, for the best animal in Classes 133-137.

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**Class 136.—South Devon Heifer, calved in 1919.<sup>1</sup>** [3 entries.]

1180 I. (£15.)—COL. THE RIGHT HON. F. B. MILDMAT, M.P., Flete, Ivybridge, for Highlands Wallflower 21803, born June 18, bred by Mrs. John Bayly, Highlands, Ivybridge; *s.* Lillian's Champion 8016, *d.* Bring-Good 17057 by Wonwell Hero 5224.

1179 II. (£10.)—W. L. HOSKING & SON, Fentongolian, Probus, Cornwall, for Fentongolian Doreen 7208, born Nov. 7; *s.* Falston Ruler 5548, *d.* Fentongolian Winnie 18300 by Cadet 4735.

**Class 137.—South Devon Heifers, calved in 1920.** [5 entries.]

1183 I. (£15.)—ROBERT SHINNAR, Stretchford, Buxtonleigh, Devon, for Karlick, born May 1; *s.* Coleridge Monarch 6472, *d.* Karlie Stretch 2nd 15420 by Hernford 4412.

1184 II. (£10.)—WILLIAM SHERDON, Higher Luson, Yealmpton, Plymouth, for Luson Countess, born March 2; *s.* Luson Perfection 7208, *d.* Vanity 3rd 15710 by Wonwell Hero 5224.

1182 III. (£5.)—COL. THE RIGHT HON. F. B. MILDMAT, M.P., Flete, Ivybridge, for Flete Countess, born Jan. 9; *s.* Randon 7315, *d.* Countess 1st 14230 by Sexton-Puer 3897.

1186 R. N.—J. STANLEY WROTH, Coombe, Aveton Gifford, Devon, for Buttercup.

**Longhorns.**

**Class 138.—Longhorn Bulls, calved in or before 1919.** [1 entry.]

1187 I. (£15. & R. N. for Champion.<sup>2</sup>)—J. L. & A. RILEY, Putley, Ledbury, for Arden Dreadnaught 763, red and little white, born May 10, 1918, bred by W. Hanson Sale, Arden Hill, Atherton; *s.* Mai of Kent 738, *d.* Arden Lady Panya by Putley Gay Lad 646.

**Class 139.—Longhorn Bulls, calved in 1920.<sup>3</sup>** [4 entries.]

1190 I. (£15.)—W. E. SWINNERTON, Manor House, Over Whitacre, Birmingham, for Stivichall Cure, red, brindle and white, born June 19; *s.* Quack, *d.* Stivichall Doreen 3rd (Vol. 11, p. 34) by April Fool 634.

1188 II. (£10.)—J. ALBERT FROST, New Hall Farm, Sutton Coldfield, Birmingham, for New Hall Coming King, brindle and white, born April 6; *s.* Chester (Vol. 10, p. 33), *d.* Comet by Maxman 537.

1191 III. (£5.)—J. W. SWINNERTON-WESTON, Over Whitacre House, Birmingham, for Whitaacre King, red, brindle and white, born May 30; *s.* Wadton Doctor, *d.* Lady Agatha 5 of Kent (Vol. 10, p. 21) by Eastwell Eagle 500.

**Class 140.—Longhorn Cows or Heifers (in-milk), calved in or before 1919.**

[5 entries.]

1195 I. (£15. & Champion.<sup>2</sup>)—W. HANSON SALE, Arden Hill, Atherton, for Arden Chander 1st, brindle and white, born July 17, 1918, calved May 12, 1921; *s.* Arden King Maker 116, *d.* Arden Lady Lorna (Vol. 8, p. 44) by Putley Gay Lad 546.

1192 II. (£10.)—J. L. & A. RILEY, Putley, Ledbury, for Putley Dianthus 2nd, brindle and white, born Aug. 2, 1918, calved Jan. 11, 1921; *s.* Croft Captain 730, *d.* Putley Dianthus (Vol. 9, p. 61) by Wadton Friar 552.

1196 III. (£5.)—W. HANSON SALE, for Grace 15th, dark brindle and white, born July 4, 1915, calved June 1, 1921, bred by the Master of Kilnloss, Stowe, Buckingham; *s.* Stowe Mar-mion 709, *d.* Grace 13th (Vol. 7, p. 47) by Westmeath Boy 433.

1193 R. N.—J. L. & A. RILEY, for Putley Rudbeckia.

**Sussex.**

**Class 141.—Sussex Bulls, calved in or before 1919.** [6 entries.]

1202 I. (£15. & R. N. for Champion.<sup>4</sup>)—MAJOR ELMER SPEED, Knowlton Court, near Canterbury, for Imperator 6100, born Feb. 20, 1919, bred by James Groves, Brownings Manor, Blackboys; *s.* Brownings Miller 6th 3883, *d.* Brownings Crystal 1st 16289 by Apsley Albert 2nd 2706.

1198 II. (£10.)—J. RAYNER BETTS, Greenhill Farm, Otham, Maidstone, for Ticehurst Chavaller 6th 4564, born June 4, 1919, bred by W. Ford, Singhurst, Ticehurst, Sussex; *s.* Chavaller 2nd 3673, *d.* Ticehurst Princess Joan 3rd 17964 by Ticehurst Goldsmith 3rd 3616.

1199 III. (£5.)—WALTER T. FERMIN, Millgate Park, Maidstone, for Lock Millgate 4949, born Jan. 14, 1919, bred by W. A. Thornton Lock, Partridge Green; *s.* St. Albans 43rd 4496, *d.* Rosina of Lock 12696 by Tutsman Torcador 2016.

1200 R. N.—MAJOR G. H. LODGE, High Beeches, Handcross, Haywards Heath, for Brownings King 6th. C.—1197.

<sup>1</sup> Prizes given by the South Devon Herd Book Society.

<sup>2</sup> Perpetual Silver Challenge Cup, value £15, given by the Longhorn Cattle Society for the best Bull or Cow in Classes 138 and 140.

<sup>3</sup> Prizes given by the Longhorn Cattle Society.

<sup>4</sup> Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 141 and 142.

**Class 142.—Sussex Bulls, calved in 1920.** [14 entries.]

1215 I. (£15, & Champion.)—CAMPBELL NEWINGTON, Oakover, Ticehurst, Sussex, for Oakover Lad 9th 5339, born March 21; *s.* Mabledon Lad 4326, *d.* Favourite 21st 13061 by Orchardmains Squire 2475.  
 1205 II. (£10.)—HAROLD W. COLEMAN, Shermanbury Park, Henfield, Sussex, for Thurston Red Rover, born March 9, bred by G. T. Eaton, Framfield; *s.* Lynwick Red Rover 3811, *d.* Brownings Stonesdon 1st 16290 by The Bear 2546.  
 1207 III. (£5.)—JULIUS C. DREWE, Wadhurst Hall, Wadhurst, Sussex, for Thurston Turk, born Feb. 5, bred by G. T. Eaton, Thurston Hall, Framfield, Sussex; *s.* Lynwick Red Rover 3811, *d.* Dringwick Pet 11708 by Albert 2nd 2025.  
 1212 R. N.—HERBERT GREAVES, The Toll Farm, Buxted, Sussex, for Avisford Rufus 5208, born Jan. 25, bred by E. C. Fairweather, Avisford Park, Arundel; *s.* Lock Rufus 3995, *d.* Birling Diamond 14419 by Birling Cecil 2780.  
 H. C.—1208. C.—1213.

**Class 143.—Sussex Cows or Heifers (in-milk), calved in or before 1918.** [2 entries.]

1218 I. (£15.)—THE EARL OF GUILFORD, Waldersham Park, Dover, for Lynwick Lady 18072, born March 25, 1915, calved March 17, 1921, bred by John Augier, Lynwick, Budwick; *s.* Lynwick Prebble 3rd 3018, *d.* Lady Gondolier Prebble 11457 by Prebble Confidence 2148.  
 1217 II. (£10.)—HAROLD W. COLEMAN, Shermanbury Park, Henfield, Sussex, for Jayes Noble Lady 18840, born Dec. 13, 1917, calved Jan. 2, 1921, bred by H. C. Lee Steers, Jayes Park, Ockley; *s.* Lock Change 2nd 3773, *d.* Noble Lady 62nd 16260 by Bravo 2914.

**Class 144.—Sussex Heifer, calved in 1919.<sup>2</sup>** [3 entries.]

1221 I. (£15, & R. N. for Champion.)—CAMPBELL NEWINGTON, Oakover, Ticehurst, Sussex, for Oakover Favourite 3rd 18913, born Jan. 3; *s.* Mabledon Lad 4326, *d.* Oakover Favourite 1st 17030 by Oakover Tordeador 3rd 3472.  
 1219 II. (£10.)—HAROLD W. COLEMAN, Shermanbury Park, Henfield, Sussex, for Burst Barn Luek 18456, born March 27, bred by J. W. Bennett, Burst Barns, Lewes; *s.* Lynwick Red Rover 3811, *d.* Lock Success 13334 by Shillingee Bewbush 6th 2400.

**Class 145.—Sussex Heifer, calved in 1920.** [10 entries.]

1227 I. (£15, & Champion.)—E. C. FAIRWEATHER, Avisford Park, Arundel, for Avisford Beauty 10236, born Jan. 6; *s.* St. Albans 43rd 4405, *d.* Lock Beauty 2nd 15983 by Prince of Lock 2nd 2499.  
 1228 II. (£10.)—WILLIAM FORD, Singehurst, Ticehurst, Sussex, for Ticehurst Twin 8th 19273, born April 21; *s.* Chevalier 2nd 3673, *d.* Hartbridge Prebble Twin 13326 by St. Albans Prebble 2197.  
 1224 III. (£5.)—HAROLD W. COLEMAN, Shermanbury Park, Henfield, Sussex, for Mona of Ewhurst 19173, born Feb. 23; *s.* St. Albans 43rd 4405, *d.* Rosina of Lock 12696 by Tutham Tordeador 2016.  
 1226 R. N.—JULIUS C. DREWE, Wadhurst Hall, Wadhurst, Sussex, for Thurston Galatea. H. C.—1223. C.—1222.

**Welsh.**

**Class 146.—Welsh Bulls, calved on or before November 30, 1919.** [6 entries.]

1233 I. (£15.)—R. M. GREAVES, Wern, Portmadoc, for Wern Sentry, born Sept. 20, 1919; *s.* Snowdon Idwal 1192, *d.* Wern Jester 1920 by Duke of Wellington 294.  
 1237 II. (£10.)—CAPT. J. C. WYNN-FRANCIS, Ystumas, Bettws-y-coed, for Admiral 1144, born Feb. 1917, bred by the Hon. F. G. Wynn, Glynllifon, Carnarvon; *s.* Glyn Togo 934, *d.* Glyn Blodwen B 2501 by Ap Mellar 629.  
 1235 III. (£5.)—JOHN W. HOLLAND, Pwll-y-Gwair, Abersoch, for Bodelwa Glyndwr 1018, born Sept. 29, 1917, bred by O. F. Hughes, Bodelwa, Anglesey; *s.* Penrhos Yswalm 1017, *d.* Bodelwa Blackan 2nd 2108 by Madryn King 493.  
 1236 R. N.—LT.-COL. THE HON. GUY G. WILSON, C.M.G., D.S.O. Arkengarthdale, Richmond, Yorks, for Wern Ruler. H. C.—1234.

**Class 147.—Welsh Bulls, calved on or between December 1, 1919, and November 30, 1920.<sup>4</sup>** [5 entries.]

1239 I. (£15.)—R. M. GREAVES, Wern, Portmadoc, for Wern Triumph, born Jan. 2, 1920; *s.* Snowdon Idwal 1192, *d.* Wern Pet 2595 by Wern Nonsuch 715.  
 1240 II. (£10.)—C. H. LLOYD EDWARDS, Nanhoron, Pwllheil, for Nanhoron Lord of the Valley, born March 20, 1920; *s.* Carmel Jim 1303, *d.* Nanhoron Negress 1377 by Nanhoron Nimble 260.

<sup>1</sup> Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 141 and 142.

<sup>2</sup> Prizes given by the Sussex Herd Book Society.

<sup>3</sup> Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 143-145.

<sup>4</sup> Prizes given by the Welsh Black Cattle Society.

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1242 III. (25).—ARTHUR W. WILLMER, Waen, Dolgellau, for *Sion O'r Bryn*, born Jan. 6, 1920, bred by H. J. Lewis, Corrig-Baron, Brynswynn; *s.* Cyneda Gwynedd 1041, *d.* Minydon 4th 2973 by Billy Black 584.

1241 R. N.—LORD PENRHYN, Penrhyn Castle, Bangor, for *Talisman of Penrhyn*.

Class 148.—*Welsh Cows or Heifers (in-milk), calved on or before November 30, 1918.* [7 entries.]

1249 I. (£15).—LORD PENRHYN, Penrhyn Castle, Bangor, for *Hester 3rd of Penrhyn* 2311, born June 11, 1914, calved Feb. 2, 1921; *s.* Madryn Cave 488, *d.* Voelas Hester 1242 by Ellyndra 117.

1245 I. (£10).—MAJOR DAVID DAVIES, M.P., Bronerliron, Llanddynam, for *Lili* 2306, born Aug. 25, 1913, calved April 16, 1920, bred by O. E. Hughes, Bodorgan, Ty Croes; *s.* Madryn King 493, *d.* Bodelwa Blackan 1325 by San Toy 624.

1247 III. (£5).—R. M. GREAVES, Wern, Portmadoc, for *Tynllwyn Dolly* 2nd 2487, born Oct. 30, 1913, calved Feb. 28, 1921, bred by W. Williams, Tynllwyn, Bodorgan; *s.* Penrhyn Tudor 516, *d.* Tynllwyn Nellie 1523 by Madryn Major 300.

1243 R. N.—THE HON. MRS. L. A. BRODRICK, Coed Coch, Abergale, for *Penmyndy Nan*.

Class 149.—*Welsh Heifers, calved on or between December 1, 1918, and November 30, 1919.* [13 entries.]

1257 I. (£15).—THE HON. SIR A. L. STANLEY, Penrhos, Holyhead, for *Dora* 3728, born June 17, 1919, bred by Lord Sheffield, Penrhos, Holyhead; *s.* Nipper of Penrhyn 1121, *d.* Marwyn 3740 by Nanhoron President 604.

1251 II. (£10).—RICHARD LLOYD GEORGE, Pencaorth, Chwilog, for *Pont-y-Gwair* Princess, born May 26, 1919, bred by J. W. Holland, Pont-y-Gwair, Aberconwy; *s.* Backellyn Goalkeeper 2212, *d.* Moly 6th of Penrhyn 2927 by Nanhoron Model 608.

1261 III. (£5).—CAPT. J. C. WYNNE-FINCH, Voelas, Bettws-y-coed, for *Voelas Sorceress* 3910, born Jan. 23, 1919; *s.* Stamp of Penrhyn 1132, *d.* Voelas Lucy 1630 by Billy Bach 3rd 409.

1250 R. N.—THE HON. MRS. L. A. BRODRICK, Coed Coch, Abergale, for *Crugenan Mair* 3rd. H. C.—1252. C.—1253.

Class 150.—*Welsh Heifer, calved on or between December 1, 1919, and November 30, 1920.* [10 entries.]

1271 I. (£15).—THE HON. SIR A. L. STANLEY, Penrhos, Holyhead, for *Gwenda*, born March 20, 1920; *s.* Nipper of Penrhyn 1131, *d.* Mona 3025 by Nanhoron President 604.

1265 II. (£10).—C. H. LLOYD EDWARDS, Nanhoron, Penrhos, for *Nanhoron Eva*, born Dec. 12, 1919; *s.* Cornel Jim 1303, *d.* Nanhoron Foxglove 2739 by Nanhoron Baronet 605.

1264 III. (£5).—R. M. GREAVES, Wern, Portmadoc, for *Wern Tulip*, born Sept. 10, 1920; *s.* Snowdon Idwal 1192, *d.* Wern Posy 2596 by Wern Nonsuch 715.

1270 R. N.—HON. SIR A. L. STANLEY, for *Arelda*. H. C.—1272. C.—1265, 1269.

Red Polls.

Class 151.—*Red Poll Bulls, calved in or before 1918.* [7 entries.]

1277 I. (£15 & Champion<sup>1</sup>).—THOMAS BROWN & SON, Marham Hall, Downham, Norfolk, for *Marham Dauntless* 11031, born Jan. 23, 1916; *s.* Gay Davyson 10563, *d.* Davy 308th H 1 20697 by Majololin 3600.

1279 II. (£10).—R. N. for *Champion<sup>1</sup>*.—G. D. SMITH, Strensham Court, Worcester, for *Strensham Ruperl* 11213, born May 17, 1917; *s.* Ashlyn Count 10125, *d.* Strensham Ruperta 23776 by Strensham Purple Emperor 10095.

1278 III. (£5).—MAJOR J. G. DUGDALE, The Abbey, Cirencester, for *Neeton Gloucester* 11423, born Feb. 13, 1918, bred by R. H. Mason, Neeton Hall, Norfolk; *s.* Shrewsbury 10489, *d.* Godiva 22573 by Turk 10115.

1275 R. N.—MAJOR D. G. ASTLEY, Little Plumstead Hall, Norwich, for *Colworth Orchid*. H. C.—1274. C.—1273, 1276.

Class 152.—*Red Poll Bulls, calved in 1919.* [12 entries.]

1283 I. (£15).—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for *Easton Autocrat* 11024, born April 12; *s.* Sudbourne Albion 11064, *d.* Charming Lass 2445<sup>2</sup> by Red David 10089.

1282 II. (£10).—THE MARCHIONESS OF GRAHAM, for *Easton Aristocrat* 11621, born April 11; *s.* Sudbourne Albion 11064, *d.* Lady Vanity 25575 by Lysander 10610.

1287 III. (£5).—THE DUCHESS OF NEWCASTLE, Clumber Park, Worksop, for *Hatton Fabian* 11677, born Feb. 2, bred by J. P. Arkwright, Hatton, Warwick; *s.* Hatton Guardian 11155, *d.* Hatton Faible 24035 by Acton Hussar 9881.

1285 R. N.—E. C. LINDSAY, Landwade Hall, Exning, Suffolk, for *Marham Floria*. H. C.—1280, 1289. C.—1288.

<sup>1</sup> Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 151-153.

<sup>2</sup> Prizes given by the Red Poll Cattle Society.

**Class 153.—Red Poll Bulls, calved in 1920.** [16 entries.]

1297 I. (£15.)—THOMAS BROWN & SON, Marham Hall, Downham, Norfolk, for **Marham Plantagenet**, born Jan. 10; *s.* Marham Pauthor 11412, *d.* Handsome Plantain P. 1 24577  
*b.* Ashlyns Count 10125.  
1298 II. (£10.)—**JOHN A. ALEXANDER**, Hatton House, Warwick, for **Hatton Fabulist**, born Jan. 14; *s.* Sudbourne Major 11076, *d.* Hatton Fabie 24035 by Acton Hussar 9881.  
1306 III. (£5.)—**G. D. SMITH**, Strensham Court, Worcester, for **Strensham Sirdar**, born Feb. 11; *s.* Strensham Sergeant 11214, *d.* Strensham Aemone 23775 by **Strensham Purple Emperor** 10095.  
1296 B. N.—**MAJOR C. L. BLUNDELL**, Halsall House, Ormskirk, for **Halsall Pennant**.  
*H. C.*—1392, 1395, 1399. *C.*—1298, 1300.

**Class 154.—Red Poll Cows or Heifers (in-milk), calved in or before 1918.** [23 entries.]

1322 I. (£15. & R. N. for Champion.)—**MAJOR J. A. MORRISON**, Basildon Park, Goring, Reading, for **Kettleburgh Rose** 2nd D 21073, born Nov. 30, 1913, calved May 28, 1914, bred by *H. W. Waine*, Kettleburgh Hall, Suffolk; *s.* Freerader 10029, *d.* Kettleburgh Rose 2nd 19870 by Standard Bearer 9331.  
1330 II. (£10.)—**JOSEPH WATSON**, Sudbourne Hall, Orford, Suffolk, for **Rendlesham Royal Gift** 23693, born Sept. 30, 1912, calved May 25, 1921, bred by the late *A. J. Smith*, Rendlesham, Woolbridge; *s.* Davyson 265th 9230, *d.* Rendlesham Gipsy 20021 by New Sirdar 7415.  
1313 III. (£5.)—**THOMAS BROWN & SON**, Marham Hall, Downham, Norfolk, for **Handsome Plantain** P. 1 24577, born April 7, 1914, calved Jan. 20, 1921; *s.* Ashlyns Count 10125, *d.* Plantain P. 1 22717 by *Acts* 9875.  
1317 R. N.—**THE MARCHIONESS OF GRAHAM**, Easton Park, Wickham Market, for **Lady Vanity**.  
*H. C.*—1309, 1311, 1324, 1327. *C.*—1310, 1328, 1329.

**Class 155.—Red Poll Heifers, calved in 1919.<sup>2</sup>** [18 entries.]

1331 I. (£15. & Champion.)—**MAJOR D. G. ASTLEY**, Little Plumstead Hall, Norwich, for Plumstead Perfect 28078, born Jan. 10; *s.* Plumstead Patrol 11047, *d.* Plumstead Prince 25834 by Plumstead Pearl 10778.  
1338 II. (£10.)—**FEELIX W. LEACH**, Yeddler Stud, Kenect, Newmarket, for **Wedder Starlight** 25032, born Jan. 24; *s.* Sudbourne King Crow 10681, *d.* Yeddler Sunbeam 25268 by Ashlyns Count 10125.  
1332 III. (£5.)—**MAJOR D. G. ASTLEY**, for Plumstead Phosphorous 28079, born Jan. 15; *s.* Plumstead Patrol 11047, *d.* Acton Candybrite 21060 by Acton Merlin 9657.  
1344 R. N.—**A. CARLYLE SMITH**, Sutton Hall, Woodbridge, for **Ashmoor Miranda**.  
*H. C.*—1335, 1336, 1337, 1346, 1347. *C.*—1333, 1342.

**Class 156.—Red Poll Heifers, calved in 1920.** [25 entries.]

1349 I. (£15.)—**HIS MAJESTY THE KING**, Sandringham, for **Royal Polly**, born Feb. 3; *s.* Royal Farmer 11447, *d.* Sudbourne Polly 26543 by Hermit's Ruby 10873.  
1362 II. (£10.)—**THE MARCHIONESS OF GRAHAM**, Easton Park, Wickham Market, for **Easton Andromeda**, born Jan. 6; *s.* Sudbourne Albion 11064, *d.* Ashlyns Fawn 21360 by Ashlyns Major 9192.  
1363 III. (£5.)—**THE MARCHIONESS OF GRAHAM**, for **Easton Armine**, born Jan. 5; *s.* Sudbourne Albion 11064, *d.* Red Fawn 25310 by Red David 10009.  
1367 R. N.—**CAPT. ALAN RICHARDSON**, Seven Springs, Cheltenham, for **Seven Springs Bessy**.  
*H. C.*—1352, 1353, 1365, 1373. *C.*—1355, 1357, 1363, 1371.

**Aberdeen Angus.**

**Class 157.—Aberdeen Angus Bulls, calved on or before November 30, 1918** [8 entries.]

1375 I. (£15. & R. N. for Champion.)—**J. H. BRIDGES**, Langshott, Horley, Surrey, for **Earl of Surrey** 43228, born Dec. 1, 1917; *s.* Gatti 39698, *d.* Ellahine of Langshott 50254 by Eland of Ballindalloch 24329.  
1377 II. (£10.)—**J. J. CRIDIAN**, Maisemore Park, Gloucester, for **Eric 2nd of Maisemore** 43525, born Dec. 11, 1917; *s.* Elegant of Tuberday 37578, *d.* Erica of Maisemore 52160 by Brave Briton of Maisemore 30218.  
1374 III. (£5.)—**VISCOUNT ALLENDALE**, Bywell Hall, Stocksfield-on-Tyne, for **Proud Prince of Bywell** 44528, born Dec. 31, 1917; *s.* Proud George 38595, *d.* Plasma of Bywell 2nd 51807 by Elmshore 29122.  
1381 R. N.—**E. G. WHEELER GALT**, Claverdon Leys, Warwick, for **Lord Allan of Claverdon**.  
*H. C.*—1380.

<sup>1</sup> Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 154-156.

<sup>2</sup> Prizes given by the Red Poll Cattle Society.

<sup>3</sup> Champion Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 157-162.

lxx      *Awards of Live Stock Prizes at Derby, 1921.*

**Class 158.**—*Aberdeen Angus Bulls, calved on or between December 1, 1918, and November 30, 1919.* [8 entries.]

1384 I. (£15, Champion<sup>1</sup>)—H. J. C. PRASBY, M.P., Apethorpe Hall, Peterborough, 2nd Black Knight of Ancherwater 45102, born April 26, 1919, bred by Andrew T. Reid, Ancherwater House, Ancherwater; *s.* Eymar 41558, *d.* Blackbird 5th of Brawall 55682 by Prince of Peru 32409.  
 1386 II. (£10)—J. J. CRIDLAN, Maisemore Park, Gloucester, for Elarcome of Goodwood 45573, born Feb. 14, 1919, bred by the Duke of Richmond and Gordon, K.G., Goodwood; *s.* Mazer 36458, *d.* Elfs of Goodwood 39025 by Benedict of Wickes 34077.  
 1388 III. (£5)—C. T. SCOTT, Buckland Manor, Broadway, Worcs., for Etruria of Buckland 45802, born Dec. 1, 1918; *s.* Etruria of Bleaton 41498, *d.* Elasticity of Bywell 51787 by Vellino of Bywell 32650.  
 1382 R. N.—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for Exbert.

**Class 159.**—*Aberdeen Angus Bulls, calved on or between December 1, 1919, and November 30, 1920.* [11 entries.]

1390 I. (£15)—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for Placeman of Bywell 48902, born Feb. 11, 1920; *s.* Proud George 38595, *d.* Princess of Benton 2nd 57120 by Prince of Jesters 32404.  
 1398 II. (£10)—H. J. C. PRASBY, M.P., Apethorpe Hall, Peterborough, for El Khabir 47880, born March 6, 1920; *s.* Prince of Parade 42804, *d.* Erica 24th of Brawall 63592 by Proud Caesar 38596.  
 1394 III. (£5)—J. J. CRIDLAN, Maisemore Park, Gloucester, for Black Idyl of Maisemore 47341, born Jan. 22, 1920; *s.* Idyl of Maisemore 36219, *d.* Blackbird 7th of Maisemore 50412 by Elector of Maisemore 30393.  
 1399 R. N.—E. G. WHEELER-GALTON, Claverdon Leys, Warwick, for Ethie, H.C.—1391.

**Class 160.**—*Aberdeen Angus Cows or Heifers (in-milk), calved in or before November 30, 1918.* [6 entries.]

1403 I. (£15, & R. N. for Champion<sup>2</sup>)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Ready for King, 2nd Tarts 58234, born March 20, 1918, calved Dec. 22, 1920, bred by Athelwold, Tarts; *s.* Kindness Again 2nd 38148, *d.* The Cullen Jill by Lady of the Mac of Culien 30320.  
 1405 II. (£10)—EDWARD A. WIGAN, Conthol Park, Andover, for Lady Rose of Conthol 61450, born Dec. 11, 1918, calved March 8, 1921; *s.* Earl Ebon of Bullindaloch 35751, *d.* Tuberose of Standen 43477, by Elector of Benton 21814.  
 1406 III. (£5)—EDWARD A. WIGAN, for Tuberose of Conthol 55475, born Dec. 16, 1918, calved Feb. 25, 1921; *s.* Baron Breslau 30148, *d.* Tuberose of Standen 43477, by Elector of Benton 21814.  
 1404 R. N.—E. G. WHEELER-GALTON, Claverdon Leys, Warwick, for Pride of Pinley.

**Class 161.**—*Aberdeen Angus Heifers, calved on or between December 1, 1918, and November 30, 1919.* [7 entries.]

1409 I. (£15, & Champion<sup>3</sup>)—J. J. CRIDLAN, Maisemore Park, Gloucester, for Eve 3rd of Maisemore 64328, born May 26, 1919; *s.* Idyl of Maisemore 36210, *d.* Eve of Maisemore 52161 by Brave Briton of Maisemore 30318.  
 1407 II. (£10)—LT. COL. G. E. BELL, Bourne Park, Canterbury, for Pearlette 2nd of Bourne 46051, born Dec. 1, 1918; *s.* Darwin 5th of Clavendon 39190, *d.* Pearlette 2nd of Bourne 46053 by Raider of Bullindaloch 31197.  
 1414 III. (£5)—WALTER A. SANDYMAN, Morden House, Royston, for Runa 5th of Morden 65747, born Dec. 12, 1918; *s.* Gaffer Cadet 41622, *d.* Rhona of Morden 49099 by Extract of Danesfield 20519.  
 1408 R. N.—J. H. BRIDGES, Langshott, Horley, Surrey, for Pride of Armbissee.

**Class 162.**—*Aberdeen Angus Heifers, calved on or between December 1, 1919, and November 30, 1920.* [14 entries.]

1414 I. (£15)—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for Ella of Bywell 66267, born Feb. 2, 1920; *s.* Proud George 38595, *d.* Eliana 59159 by Pride's Reviver 33600.  
 1417 II. (£10)—J. J. CRIDLAN, Maisemore Park, Gloucester, for Ideal 5th of Maisemore 66761, born March 22, 1920; *s.* Prince of Salem 31112, *d.* Tulip of Standen 45122 by Elector of Benton 21814.

<sup>1</sup> Prizes given by the Aberdeen Angus Cattle Society.

<sup>2</sup> Champion Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 157-162.

<sup>3</sup> Silver Medal given by the Argentine Aberdeen Angus Cattle Society for the best animal in Classes 157-162.

<sup>4</sup> Champion Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Champion Gold Medal of the Aberdeen Angus Cattle Society in Classes 192-197.

1415 III. (£5).—J. H. BRIDGES, Langshott, Horley, Surrey, for *Comma* 2nd 66481, born Dec. 13, 1919; *s.* Echemus of Ballindalloch 41200, *d.* Gaitly of Eshott 50092 by *Baron Breslau* 30146.  
 1423 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for *Evilne* of Basildon.  
 H. C.—1420. C.—1424.

### Galloways.

**Class 163.**—*Galloway Bulls, calved on or before November 30, 1919.* [4 entries.]

1430 I. (£15, & Champion).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Tarbreoch Worthy* 13426, born Feb. 25, 1917, bred by John Cunningham, Tarbreoch, Dalbeattie; *s.* *Sapphire* 12268, *d.* *Natty* 39th of *Tarbreoch* 22588 by *Sweepstakes* 10091.  
 1428 II. (£10).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castle Milk, Lockerbie, for *Darling* 5th of *Castlemilk* 13839, born Jan. 1, 1918; *s.* *Jovial* of *Blackcombe* 11716, *d.* *Dalia* of *Castlemilk* 22048 by *Baron* 10033.  
 1431 III. (£5).—ROBERT GRAHAM, for *Dean of Castlemilk* 14203, born April 9, 1919, bred by Sir R. W. Buchanan-Jardine of Castle Milk, Lockerbie; *s.* *Cuthbert* 11450, *d.* *Dorothy* of *Castlemilk* 24676 by *Archie* 5th of *Castlemilk* 11010.

**Class 164.**—*Galloway Bulls, calved on or between December 1, 1919, and November 30, 1920.* [2 entries.]

1432 I. (£15, & R. N. for Champion).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castle Milk, Lockerbie, for *Challenger* of *Castlemilk* 14490, born April 28, 1920; *s.* *Tarbreoch Borderer* 3rd 13775, *d.* *Claire* 2nd of *Castlemilk* 23487 by *Baron* 10033.  
 1433 II. (£10).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Ideal of Ardachie* 14453, born Dec. 16, 1919, bred by late Peter Gordon, Ardachie, Kirkcowan; *s.* *Ronown* 4th of *Craighouse* 13691, *d.* *Dam* 3rd of *Ardachie* 24629 by *Post Mark* 10273.

**Class 165.**—*Galloway Cows or Heifers (in-milk), calved on or before November 30, 1918.* [2 entries.]

1434 I. (£15).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castle Milk, Lockerbie, for *Dorothy* of *Castlemilk* 26767, born Dec. 3, 1914, calved March 28, 1921; *s.* *Archer* 5th of *Castlemilk* 11010, *d.* *Dorothy* 5th of *Stepford* 22155 by *Cairn* of *Stepford* 8888.  
 1435 II. (£10).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Jenny* of *Auchengassel* 25879, born Jan. 21, 1917, calved May 14; *s.* *Patriot* of *Ewanston* 12347, *d.* *Sally* of *Auchengassel* 24029 by *Legacy* of *Auchengassel* 10902.

**Class 166.**—*Galloway Heifers, calved on or between December 1, 1918, and November 30, 1919.* [3 entries.]

1436 I. (£15).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Empress* 6th of *Auchengassel* 26968, born Feb. 9, 1919; *s.* *Empress* of *Auchengassel* 13488, *d.* *Empress* 5th of *Auchengassel* 26968 by *Black Prince* 11622.  
 1438 II. (£10).—JOHN SCOTT, Drumhumprey, Dalbeattie, for *Drumhumprey Ruby Princess* 27137, born Jan. 4, 1919; *s.* *Cashier* of *Tarbreoch* 13429, *d.* *Camilla* 31st of *Drumhumprey* 25599 by *Hopewell* of *Morrington* 11933.  
 1437 III. (£5).—JOHN SCOTT, for *Drumhumprey Gerty* 4th 27188, born April 15, 1919; *s.* *Cashier* of *Tarbreoch* 13429, *d.* *Gertie* of *Drumhumprey* 21116 by *Othello* of *Kilghenny* 8469.

**Class 167.**—*Galloway Heifers, calved on or between December 1, 1919, and November 30, 1920.* [4 entries.]

1442 I. (£15).—JOHN SCOTT, Drumhumprey, Dalbeattie, for *Drumhumprey Gertie* 5th 27788, born May 1, 1920; *s.* *Cashier* of *Tarbreoch* 13429, *d.* *Gertie* of *Drumhumprey* 21116 by *Othello* of *Kilghenny* 8469.  
 1439 II. (£10).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castle Milk, Lockerbie, for *Dahlia* 2nd of *Castlemilk* 27618, born Feb. 5, 1920; *s.* *Norry* 2nd of *Castlemilk* 11777, *d.* *Dahlia* of *Castlemilk* 22948 by *Baron* 10033.  
 1440 III. (£5).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Holehouse Daffodil* 27886, born April 15, 1920, bred by Daniel Hislop, Holehouse, Dalbeattie; *s.* *Gerrard* 13407, *d.* *Trilly* of *Scrogglefield* 24948 by *Napier* 12144.  
 1441 R. N.—JOHN SCOTT, for *Cowslop* 31st of *Drumhumprey*.

### Ayrshires.

**Class 168.**—*Ayrshire Bulls, calved in or before 1920.* [2 entries.]

1443 I. (£15).—ROBERT MARSHALL, Mains of Kilmarnock, by Alexandria, Dunbartonshire, for *Cawhillan Flashlight* 15197, white and brown, born Jan. 27, 1918, bred by William Watson, High Tarbet, Ochiltree; *s.* *Barlough Daylight* 15350, *d.* *High Tarbet Cherry* 43173 by *High Tarbet Coronation* 9377.

<sup>1</sup> Champion Prize of £5 given by the Galloway Cattle Society for the best animal in Classes 163-167.

<sup>2</sup> Prizes given by the Galloway Cattle Society.

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1444 II. (£10.)—ROBERT MARSHALL, for Kirkland Dominion 19442, white and brown, born Nov. 17, 1918, bred by W. Murray, Kirkland Closeburn; *s.* Barboight Dignity 14806, *d.* Kirkland Hyacinth 52325 by Chapmantown Benedict 8896.

Class 169a.—*Ayrshire Cows or Heifers (in-milk).* [7 entries in A and B.]  
1446 I. (£15.)—WILLIAM L. FERGUSON, Catlinus, Lockerbie, for Catlinus Princess Alice 51043, dark brown and white, born March 21, 1915, calved April 18, 1921; *s.* Brae Rising Star 8187, *d.* Ardgowan Princess Lizzie 22241.

1448 II. (£10.)—WILLIAM GIBSON, C.B.E., Moorside Farm, Worston, Clitheroe, for Moorside Amorata 2nd 32529, brown and white, born May 8, 1912, calved May 19, 1921; *s.* Clockstone Royal Salute 7547, *d.* Moorside Amorata 32528 by Clockstone Tam 6545.

Class 169b.—*Ayrshire Cows or Heifers (in-calf).*<sup>1</sup>

1445 I. (£15.)—WILLIAM L. FERGUSON, Catlinus, Lockerbie, for Catlinus Missie 63023, white and brown, born March 15, 1917, In-calf, bred by the late Andrew Baird, Garclough, New Cumnock; *s.* Townhead Umpire 14504, *d.* Townhead Jenny 47543.

**Park Cattle.**

Class 170.—*Bulls, calved in or before 1920.* [4 entries.]

1452 I. (£15.)—JOHN CATOR, Woodbastwick Hall, Norwich, for Petrarch, white, black points, born Nov. 15, 1918; *s.* Peter, d. Jollity 380 by Cumberland 1st.

1455 II. (£10.)—MRS. G. LANCASTER, Kilmarsh Hall, Northampton, for Kilmarsh Ancus 49, white, born Nov. 17, 1917, bred by Major Q. Gurney, Bawdeswell, Norfolk; *s.* Woodbastwick Billy Buffin, *d.* Bawdeswell Azune 174 by Kilmarsh Monarch.

1454 III. (£5.)—CAPT. J. H. HOWELL, Trewellwell, Solva, for Solva Snowstorm, white with black points, born May 21, 1920; *s.* Solva Snowball, *d.* Solva Snowdrop.

Class 171.—*Cows or Heifers (in-milk), calved in or before 1918.*<sup>2</sup> [5 entries.]

1456 I. (£15.)—JOHN CATOR, Woodbastwick Hall, Norwich, for Junket 2nd, born May 4, 1917, calved Oct. 15, 1920; *s.* Stokesby 2nd, *d.* Junket 376 by Cumberland 1st.

1459 II. (£10.)—CAPT. J. H. HOWELL, Trewellwell, Solva, for Solva Snowdrop, white with black points, born March 1915, calved May 17, 1921, bred by Charles Matheas, Lamphey.

1457 III. (£5.)—MAJOR Q. E. GURNEY, Bawdeswell Hall, Norfolk, for Boadicea 2nd 176, white with black points, born July 26, 1917, calved May 12; *s.* Woodbastwick Billy Buffin, *d.* Bawdeswell by Boadicea 1st.

**British Friesians.**

Class 172.—*British Friesian Bulls, calved in or before 1918.* [16 entries.]

1475 I. (£15. & Champion)—W. & R. WALLACE, Swangleys, Knebworth, Herts, for Kingswood (imported) Ynte 4047, born Dec. 7, 1913, bred by G. R. Miedema, Leenwarden, Holland; *s.* Karel b264 F.R.S., *d.* Kalma 20338 F.I.S. by Albert 2nd 2387 F.R.S.

1463 II. (£10. & R. N. for Champion)—A. & J. BROWN, Haydon Hill Farm, Aylesbury, for Petigards (imported) Blei Albert 4321, born Nov. 16, 1913, bred by Jan Boersma, Fries, Holland; *s.* Albert 1304 F.R.S., *d.* Anna 3rd 10955 F.R.S., by Jan 2391 F.R.S.

1474 III. (£5.)—MRS. R. B. BROWN, Ednaston, for Kingswood Goldfiner 6493, born Oct. 2, 1916, bred by Hare Hall, Thame, Flushing, Worthing; *s.* Kingswood (imported) Ynte 4047, *d.* Kingswood Bramfield 9272.

1471 R. N.—THE EARL OF LEITrim, Teston Court, Melstone, for Clockhouse Binald.  
H. C.—1481.      C.—1461.

Class 173.—*British Friesian Bulls, calved in 1919.* [14 entries.]

1477 I. (£15.)—A. & J. BROWN, Haydon Hill, Aylesbury, for Hedges Albert Grace 11827, born Oct. 28; *s.* Petigards (imported) Blei Albert 4321, *d.* Hedges Dutch Grace 24932 by Hedges (imported) Fobie 2nd 3093.

1480 II. (£10.)—CHRISTOPHER WORRINGTON, Brooklands, South Godstone, Surrey, for Brooklands Ynte 11145, born March 1; *s.* Brooklands Job-O-Work 7423, *d.* Brooklands Fryleigh 2724 by Kingswood (imported) Ynte 4047.

1478 III. (£5.)—WILLIAM BROWN, Chilgrove, Chichester, for Colton Supremacy 11371, born June 3, bred by Hugh Brown, Colton Mains, Dunfermline; *s.* Terling (imported) Vic Bortus 4541, *d.* Colton Bram-Lorna 23946 by Colton (imported) Vic Bram 3705.

1484 R. N.—W. G. PLAYER, Ednaston Manor, Derbyshire, for Knebworth Ynte's Grand Parade.  
H. C.—1481.      C.—1480.

<sup>1</sup> Prizes given by the Ayrshire Cattle Herd Book Society.

<sup>2</sup> Prizes given by the Park Cattle Society.

<sup>3</sup> Champion Prize of £5 given by the British Friesian Cattle Society for the best Bull in Classes 172-174.

Class 174.—*British Friesian Bulls, calved in 1920.*<sup>1</sup> [15 entries.]

1494 I. (515.)—H. J. CATCHILL, Church Farm, Bickenhill, Hampton-in-Arden, for Chaddesley Locky Lad 13505, born Jan. 31, bred by J. H. Bean, C.B.E., Chaddesley Corbett, Kidderminster; *s.* Glenanne Pioneer 7923, *d.* Penhurst Gladness 26032 by Garton (imported) Bravo 3305.

1496 II. (210.)—THE HACHE HERD, Mintham Court, Worthing, for Hache Cerjan Ulysses 14105, born July 7; *s.* Hedges Second Series 6427, *d.* Wigginton Saakje 2nd 23144 by Wigginton (imported) Johan 4637.

1493 III. (25.)—A. & J. BROWN, Haydon Hill, Aylesbury, for Hedges Friesland Champion 14275, born June 8; *s.* Petyards (imported) Bles Albert 4321, *d.* Hedges Friesland Queen 14998 by Hedges Champion 271.

1492 R. N.—JOHN BROMET, Golf Links Farm, Tadcaster, for Dunninald Kaffir. H. C.—1505. C.—1501.

Class 175.—*British Friesian Cows (in-milk), calved in or before 1917.* [21 entries.]

1516 I. (£15. & Champion.<sup>2</sup>)—ETHELBERT FURNES, Hamels Park, Buntingford, for Hedges (imported) Froukje 3rd 18050, born June 14, 1913, calved March 27, 1921, bred by Messrs. Schaat, Deursum, Holland; *s.* Ceres 4497 F.R.S., *d.* Froukje 2nd 15632 F.R.S. by Jan 3540 F.R.S.

1511 II. (£10. & R. N. for Champion.<sup>2</sup>)—W. H. CASE, Gateley Manor, Elmham, Norfolk, for Elmham Marilee 14610, born Dec. 20, 1913, calved May 25, 1921; *s.* Stanfield Master 663, *d.* Elmham Mary 902.

1524 III. (£5.)—W. & R. WALLACE, Swangleys, Knebworth, Herts, for Attimore Pleasant Lass 27306, born Sept. 18, 1917, calved May 13, 1921, bred by John Masson, Attimore Hall, Hatfield; *s.* Attimore Baron 3469, *d.* Attimore Pleasant 5286.

1504 R. N.—A. & J. BROWN, Haydon Hill, Aylesbury, for Hedges Dutch Calamity.

Class 176.—*British Friesian Heifers (in-milk), calved in 1918.*<sup>1</sup> [6 entries.]

1527 I. (£15.)—RICHARD G. BUXTON, Petyards, Spore, King's Lynn, for Petyards Countess 35372, born Aug. 14, calved May 8, 1921; *s.* Clockhouse Victor 6053, *d.* Petyards Cowlet 23212 by Petyards (imported) Bles Albert 4321.

1532 II. (£10.)—GEORGE WOODFIELD, The Leys, Gnosall, Staffs, for Filongley Princess Mary 83398, born April 27, calved Jan. 2, 1921; *s.* Garton Bravado 6273, *d.* Filongley Queen Mary 24486 by Wychnor (imported) Ynte 4709.

1528 III. (£5.)—JAMES E. HUGHES, Lea Hall, Mollington, Chester, for Macknade Lady Nan 34746, born May 6, calved April 26, 1921, bred by Frederick Neame, Macknade, Faversham; *s.* Macknade Heraldry 4139, *d.* Macknade Nancy 15368 by Macknade Wagon 435.

Class 177.—*British Friesian Heifers, born in 1919.*<sup>1</sup> [14 entries.]

1538 I. (£15.)—LIEUT.-COL. W. E. HARRISON, Wychnor Park, Burton-on-Trent, for Terling Jetje 2nd 42300, born March 16, bred by Lord Rayleigh, Terling Place, Witham, Essex; *s.* Terling (imported) Verwachting 4543, *d.* Lavenham (imported) Jetje 32nd 18382 by Bravo 5269 F.R.S.

1545 II. (£10.)—WALTER ROADLEY, The Old Farm, Barton-in-Fabis, Notts, for Fabs Lily 38772, born Aug. 21; *s.* Charlwood Signal 7497, *d.* Thorpe Lily 15640 by Fingringhoe Witch 1542.

1536 III. (£5.)—HACHE HERD, Mintham Court, Worthing, for Clockhouse Vic Rinze 37868, born March 26, bred by Trevor Williams, Pynefield Manor, West Hyde, Rickmansworth; *s.* Clockhouse (imported) Vic Wouter 3691, *d.* Clockhouse (imported) Rinze 7th 17234 by Buringa 500b 5511 F.R.S.

1540 R. N.—THE DUKE OF MARLBOROUGH, K.G., Blenheim Palace, Woodstock, for Clockhouse Countess. H. C.—1545. C.—1539.

Class 178.—*British Friesian Heifers, calved in 1920.* [32 entries.]

1553 I. (£15.)—G. T. EATON, Thurston Hall, Framfield, Sussex, for Thurston Evelyn 49382, born March 10; *s.* Gorstage (imported) Mietje's Victor 3939, *d.* Gorstage Gloaming 2nd 14854 by Gorstage Graf 1361.

1572 II. (£10.)—W. & R. WALLACE, Swangleys, Knebworth, Herts, for Knebworth Ynta's Countess 46564, born Jan. 16; *s.* Kingswood (imported) Ynte 4047, *d.* Knebworth Countess 29534 by Wigginton (imported) Johan 4637.

1554 III. (£5.)—ETHELBERT FURNES, Hamels Park, Buntingford, for Hamels Chatty 45622, born April 15; *s.* Dunninald Gaatscomairschay 6175, *d.* Dunninald Daffodil 14520 by Dunninald Baron 1167.

1577 R. N.—CHRISTOPHER WORDSWORTH, Brooklands, South Godstone, for Brooklands Princess Bluebell. H. C.—1537, 1548, 1573. C.—1551, 1560, 1562.

<sup>1</sup> Prizes given by the British Friesian Cattle Society.

<sup>2</sup> Champion Prize of £5 given by the British Friesian Cattle Society for the best Cow or Heifer in Classes 175-178.

**Jerseys.**

*N.B.—In the Jersey Classes the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.*

**Class 179.—Jersey Bulls, calved in or before 1918.** [8 entries.]

1580 I. (£15, & Champion.)—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for Plaintiff's Noble 12416, whole colour, born March 21, 1915, bred by E. E. Lockett, Esq., Owner of Fern's Farm, Fern's Noble 10624, d. Bonhills (9670), F.S.H.C.  
 1579 II. (£10.)—MISS C. BRYCE LUCAS, Sutton House, Ford, Lewes, for Culverden Pioneer 13221, calved April 18, 1918; a. Pioneer's Noble 12416, d. La Sente's Fairy by Self Acting 11147.  
 1584 III. (£5.)—ERIG-GENERAL J. T. WIGAN, C.B., C.M.G., D.S.O., M.P., Danbury Park, Chelmsford, for Red Ensign 13397, whole colour, born May 2, 1917, bred by H. V. M. Clark, Lyndsayes, Ingatestone, Essex; a. Illustrous 10280, d. Wotton Red Egg by Red Cloud 11818.  
 1583 R. N.—MRS. WATSON-KENNEDY, Wiveton Hall, Cley, Norfolk, for Descendant.

**Class 180.—Jersey Bulls, calved in 1919.** [10 entries.]

1594 I. (£15, & R. N. for Champion.)—B. BRUCE WARD, Godinton, Ashford, Kent, for Pilgrim 13391, broken colour, born April 14; a. Prometheus 13391, d. Evergreen by Catillon's Prince 11639.  
 1589 II. (£10.)—LADY LUDLOW, Luton Hoo, Beds, for Marston Cowslip, whole colour, born June 17, bred by W. Wilkins, Longmarston, Tring; a. General Cowslip 10980, d. Java's Witch (Vol. 31, p. 314) by Beechside You'll Do 11924.  
 1588 III. (£5.)—COLONEL LIONEL GIBSON, C.M.G., Lingin Hall, Brampton Bryan, for Don Cid, whole colour, born March 24, bred by Mrs. Hayes Sadler, Norsbury, Sutton Scotney; a. The Cid 12473, d. Donna Ypres (Vol. 30, p. 265) by Fontaine's Oxford Lad 12003.  
 1591 R. N.—HERBERT CECIL PELLY, Kentwicks, Nutfield, Surrey, for Danbury Red King.

**Class 181.—Jersey Bulls, calved in 1920.\*** [15 entries.]

1609 I. (£15.)—ERIG-GENERAL J. T. WIGAN, C.B., C.M.G., D.S.O., M.P., Danbury Park, Chelmsford, for Danbury Majestic, whole colour, born Aug. 17; a. Red Ensign 13397, d. Mitylene (Vol. 27, p. 85) by Topsy's Noble 10116.  
 1598 II. (£10.)—MRS. EVELYN, Wotton House, Dorking, for Wotton Aster, whole colour, born Aug. 29; a. Wotton Beauteous Cloud, d. Wotton Parquerette (Vol. 26, p. 416) by Illustrous 10289.  
 1597 III. (£5.)—CAPTAIN E. W. S. FOJAMBE, Osberton, Worksop, for Esmond, whole colour, born March 6, bred by the late Lt.-Col. G. S. Fojambe, C.B., Osberton; a. Matzelbe 12705, d. Echo (Vol. 27, p. 266) by Jack Frost 10293.  
 1604 R. N.—MRS. RYDD, Felbridge Park Farm, East Grinstead, for Cardiff. H. C.—1595, 1605, 1606.

**Class 182.—Jersey Cows (in-milk), calved in or before 1917.** [32 entries.]

1615 I. (£15, & Champion.)—MRS. EVELYN, Wotton House, Dorking, for Dairymaid (Vol. 26, p. 267), whole colour, born June 1, 1912, calved March 24, 1921, bred by A. W. Ruggles, M.R.C.V.S., Buntingford; a. Midshipman 11064, d. Daffodil 3rd by Royal Reward 0413.  
 1620 II. (£10, & R. N. for Champion.)—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for Bessy's Belle (17319) P.S., H.C., whole brown, born March 29, 1910, calved April 23, 1921, bred by E. Manger, Trinity, Jersey; a. Brighton (4043), d. Bessy's Remembrance (12229) by Jolly Sailor (3498).  
 1637 III. (£5.)—R. BRUCE WARD, Godinton, Ashford, Kent, for Evergreen (Vol. 31, p. 273), whole colour, born Sept. 4, 1916, calved May 2, 1921, bred by the late Dowager Countess Roberts, Englemore; a. Catillon's Prince 11639, d. Etiquette by Fleur de Lys 9583.  
 1618 Special—MRS. EVELYN, for Wotton Margaret.  
 1635 R. N. for Special—LAURENCE E. TUBBS, for Stapleton Melville. H. C.—1621, 1627, 1635, 1640. C.—1610, 1626, 1629.

**Class 183.—Jersey Heifers (in-milk), calved in 1918.\*** [10 entries.]

1645 I. (£15.)—J. H. N. ROBERTS, Weyboards Farm, Harefield, Middlesex, for Casapeda, whole colour, born Oct. 3, calved May 17, 1921, bred by E. D. Gibant, Trinity, Jersey; a. Masterman of Oaklands 13020, d. Cowslip 71st (23357) P.S., H.C., by General Cowslip 10980.

\* Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 179-181.

\* Prize given by the English Jersey Cattle Society.

\* Champion Prize of £5 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 182-185.

\* Special Prize of £10 given by the English Jersey Cattle Society for the best Cow in Class 182, bred by Exhibitor and sired in Great Britain or Ireland.

1646 II. (£10, & R. N. for Special<sup>1</sup>)—MRS. RUDD, Felbridge Park Farm, East Grinstead, for Noble strain (Vol. 1, p. 97), whole colour, born May 14, calved June 22, 1921; *s.* Goddington, Vol. 1, 2nd 1920, *d.* Prominence by Volturno 12179.

1648 III. (£1)—THE HON. MURRAY SMITH, Gunley Hall, Market Harborough, for Valette's Lass (25581) P.S., H.C., whole colour, born Feb. 18, calved April 23, 1921, bred by Major H. J. Tennant, St. Brelade, Jersey; *s.* Vale Lily's Lad (3384), *d.* Valette (18061) by Electras Raleigh (2244).

1649 R. N.—THE HON. MRS. TENNANT, St. Anne's Manor, Sutton, Loughborough, for Buckstone Fairy.

**Class 184.—Jersey Heifers (in-milk), calved in 1919.** [12 entries.]

1652 I. (£15.)—COLONEL LIONEL GIBSONE, C.M.G., Lingen Hall, Brampton Bryan, for Florence's Cream Belle, whole colour, born Feb. 23, calved June 16, 1921, bred by M. G. de la Haye, St. Mary's, Jersey; *s.* Council 5524, *d.* Florence's Butter Belle (24263) P.S., H.C. by Island Butter King (5223) P.S., H.C.

1661 II. (£10, & Special<sup>1</sup>)—R. BRUCE WARD, Gedinton, Ashford, Kent, for Piquant (Vol. 31, p. 120), whole colour, born April 21, calved April 20, 1921; *s.* Prometheus 13391, *d.* Caper by Capricorn 10892.

1657 III. (£5.)—OSWALD F. MOSLEY, Leasingham Manor, Sleaford, Lincs, for Leasingham Silkworth (Vol. 31, p. 80), whole colour, born May 1, 1919, calved June 1, 1921; *s.* Admiral 12517, *d.* Wimsgold Princess 3rd by Laddele 11745.

1662 R. N.—R. BAXTER WARD, 10th Princess 1st. C.—1659.

**Class 185.—Jersey Heifers, calved in 1920.** [18 entries.]

1678 I. (£15.)—LAURENCE E. TUBBS, The Priory, Stevenage, Herts, for Xenia's Girl, whole fawn, born April 20, bred by L. Lucas, St. Peter's, Jersey; *s.* Xenia's Sultan (5578), *d.* Castor's Gill 3rd (24502).

1677 II. (£10.)—MRS. HAYES SADLER, Norsbury, Sutton Scotney, Hants, for Bayleaf's Ruth, whole colour, born April 19; *s.* Bayleaf Cld 12832, *d.* Wotton Catriona by Red Cloud 11818.

1681 III. (£5.)—MRS. EDGAR WATTS, Eastwood Park, Falfield, Glos., for Tinker Bell, whole colour, born May 25, bred by Mrs. de Knoop, Calveley Hall, Tarporley; *s.* Daisy's Boy 12825, *d.* Calveley Bluebell (Vol. 30, p. 240) by Oxjesty's Lad 11799.

1671 R. N.—LADY LUDLOW, Luton Hoo, Beds, for Exempt 5th. H. C.—1667, 1679.

**Guernseys.**

N.B.—Unless otherwise stated the numbers refer to the English Guernsey Herd Book.

**Class 186.—Guernsey Bulls, calved in or before 1919.** [19 entries.]

1683 I. (£15, & Champion<sup>2</sup>)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for Hammill of Marston 3334, fawn and little white, born Dec. 14, 1916, bred by Lady Margaret Boscawen, Treray, Perranwell, Cornwall; *s.* Tregonning Good Friday 2nd 2000, *d.* Fawcett 7634 by Fawcett 2nd.

1696 II. (£10.)—SIR JAMES REMYNT, Bt., M.P., The Grange, Hare Hatch, near Tiverton, Berks, for Dene Sequel 3678, fawn and white, born Dec. 10, 1918; *s.* Sequel's Victor 2nd 3591, *d.* Gwendra 4th 5820 by Milford Easter Gift 1228.

1698 III. (£3.)—O. PORTMAN BURECH, Valencia, Meath Green Lane, Horley, Surrey, for Elfordleigh Regal 3512, fawn and white, born Nov. 3, 1917, bred by Mrs. R. C. Bainbridge, Elfordleigh, Plympton; *s.* Elfordleigh Prince Royal 3125, *d.* Trequean Maggle 2nd 14042 by Godolphin Arthur 1684.

1684 R. N.—MISS EVA B. BALFOUR, New Bell Farm, Haughley, Suffolk, for Harwood Jolly Boy 2nd. H. C.—1685, 1686. C.—1687, 1695, 1699.

**Class 187.—Guernsey Bulls, calved in 1920.** [10 entries.]

1704 I. (£15, & R. N. for Champion<sup>3</sup>)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks, for Murrell Desmond, lemon and white, born May 14; *s.* Murrell Governor's King of L'Etouenne 3765, *d.* Donata 7th of Warren Wood 9949 by Godolphin Bar Gold 2136.

1705 II. (£10.)—G. P. SANDY, Paddington Hall, Neston, Cheshire, for Paddington Lord Bremenford 2nd 11869 by Lord Roff 42753.

1707 III. (£5.)—MRS. FRANK PRATT-DARLOW, Lynchmere House, Haslemere, Surrey, for Lynchmere Prince 2nd 2nd, fawn, born Aug. 12; *s.* Prince of Vimiera 3577, *d.* Lynchmere Violet 2nd 12214 by Poffy's Ideal of Maison de Bas 3198.

1708 R. N.—O. PORTMAN RUBEGE, Valencia, Meath Green Lane, Horley, for Valencia Sultan. H. C.—1701, 1705.

<sup>1</sup> Special Prize of £10 given by the English Jersey Cattle Society for the best Heifer in Classes 183 and 184, bred by Exhibitor and bred in Great Britain or Ireland.

<sup>2</sup> Prizes given by the English Jersey Cattle Society.

<sup>3</sup> Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 186 and 187.

**Class 188.—Guernsey Cows or Heifers (in-milk), calved in or before 1918.** [19 entries.]

1724 I. (\$15, & Champion.)—MRS. FRANK PRATT-BARLOW, Lynchmere House, Haslemere, Surrey, for *Blue Bell* 2nd Gloucester 10493, fawn and white, born April 8, 1914, calved April 10, 1921; *a*. H. Fitzwalter, Herriard Park, Canterbury; *a*. Royal Sequel 2511, *d*. Ashburnham Blue Bell 7529 *g*. Charming of the Gron 1804; 1720 II. (\$10.)—E. J. WYNERS, Copland Hall, Epping, for *Miss Pansy* 10,006, fawn and white, born April 28, 1913, calved May 10, 1921, bred by P. Q. Christopher, Engew, Gwthian, Hayle; *a*. Lodeock Dairyman 3049, *d*. Engew Bluestocking 2nd 2483 by Trengwathton Village Favourite 2102; 1713 III. (\$5.)—H. R. H. THE DUCHESS OF ALBANY, Claremont, Esher, for *Trequeas*, Lady 2nd 11770, red and white, born July 20, 1915, calved Feb. 24, 1921, bred by W. Penrose, Trequean, Breage, Cornwall; *a*. Senuel's Galore 2nd 2340, *d*. Lady of the Spurs 7343 by Shamrock of the Spurs 1561 P.S., R.G.A.S.; 1719 R. N.—MRS. JERVOISE, Herriard Park, Basingstoke, for *Fanny du Foulon* 22nd. H. C.—1712, 1716, 1718, 1721. C.—1715, 1726.

**Class 189.—Guernsey Heifers (in-milk), calved in 1919.\* [9 entries.]**

1735 I. (\$15, & R. N. for Champion.)—MRS. FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for *Lynchmere Blue Bell* 2nd 14567, fawn and white, born March 27, calved May 3, 1921; *a*. Robert's Boy's Sequel 2490, *d*. Blue Bell of Goodhustone 10493 by Royal Sequel 2511; 1738 II. (\$10.)—O. PORTMAN RUEBECK, Valencia, Meath Green Lane, Horley, Surrey, for *Fanny of Tregonning* 14330, yellow and white, born March 17, calved June 7, 1921, bred by G. Blight, Tregonning, Breage, Helston; *a*. Lodeock Prince Charming 3165, *d*. Fanny of Lelant 9th 5803 by Disappointment 1368; 1737 III. (\$5.)—SIR JAMES REMNANT, Bt., M.P., The Grange, Hare Hatch, near Twyford, Berks, for *Dene Treacle* 2nd 14230, dark fawn and white, born March 31, calved May 16, 1921; *a*. Sequel's Victor 2nd 3561, *d*. Dene Treacle 11248 by Dene Dandy 2720; 1734 R. N.—H. E. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for *Polly of the Isles* of Goodnestone 4th. H. C.—1731. C.—1736.

**Class 190.—Guernsey Heifers, calved in 1920. [12 entries.]**

1748 I. (\$15.)—O. PORTMAN RUEBECK, Valencia, Meath Green Lane, Horley, Surrey, for *Valencia Royal Rose*, fawn and white, born Feb. 9; *a*. Elfordleigh Regal 3512, *d*. Elfordleigh Dora 12734 by Stagenhoe Charming 4th 3036; 1741 II. (\$10.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for *Elfordleigh Margarite*, fawn and little white, born May 5; *a*. Hammill of Marazion 3334, *d*. Daisy of Stagenhoe 11232; 1742 III. (\$5.)—SIR HARRY GOSCHEN, K.B.E., Durrington House, Harlow, for *Durrington Beauty* 6th, fawn and white, born April 19; *a*. Durrington Royal King 3507, *d*. Durrington Beauty 12721 by Rose King 2843; 1744 R. N.—MRS. JERVOISE, Herriard Park, Basingstoke, for *Rosie's Lass* 2nd of the Glen. H. C.—1760. C.—1746.

**Kerries.**

*N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.*

**Class 191.—Kerry Bulls, calved in or before 1919. [6 entries.]**

1754 I. (\$15, & R. N. for Champion.)—L. HARRISON & CO., LTD., Cogham, Horsham, for *Valencia Linkman* 496, born April 24, 1919, bred by The Knight of Kerry, Valencia Island, Co. Kerry; *a*. Valencia Chieftain 806, *d*. Valencia Meta 4122 by Valencia Lord 1st 782; 1755 II. (\$10.)—COLONEL RYDDE, M.P., Stubton Hall, Stubton, Lincs, for *Minley Emperor* 439, born Dec. 5, 1917, bred by L. Currie, Minley Manor, Farnborough; *a*. Valencia Lord 3rd 370, *d*. Minley Mistress 1253; 1751 III. (\$5.)—LAURENCE CURRIE, Minley Manor, Farnborough, for *Watersheen Raimore* 454, born Dec. 23, 1919, bred by Capt. R. E. Palmer, Oaklands Park, Newdigate; *a*. Manganer Dermot 3rd 388, *d*. Raimore Album 2nd 2179 by Raimore Hawthorne 306; 1753 R. N.—LADY FITZGERALD, Buckland House, Faringdon, for *Buskland Battie*. H. C.—1752.

\* Champion Prize of £5 given by the English Guernsey Cattle Society for the best Cow or Heifer in Classes 188-190.

<sup>1</sup> Prizes given by the English Guernsey Cattle Society.

<sup>2</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 191-194.

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**Class 192.—Kerry Bulls, calved in 1920.<sup>1</sup>** [2 entries.]

1757 I. (£15.)—LADY FITZGERALD, Buckland House, Faringdon, for Buckland Viking 470, born April 23, bred by L. Currie, Minley Manor, Farnborough ; s. Minley Alexander (Vol. 19, p. 228) by Minley Mars 362.  
1758 II. (£10.)—JOHN WILLIAM TOWLER, Wadlands Hall, Farsley, Leeds, for First Flight of Carton 474, born Feb. 23, bred by the Duke of Leinster, Carton, Maynooth, Co. Kildare ; s. Valenca Hard 903, d. Holly 10th of Carton 3714 by Dermot 468.

**Class 193.—Kerry Cows or Heifers (in-milk), calved in or before 1918.** [7 entries.]

1764 I. (£15. & Champion<sup>2</sup>)—JOHN WILLIAM TOWLER, Wadlands Hall, Farsley, near Leeds, for Wyresdale Clover 1530 F.S., born in 1908, calved May 13, 1921, breeder unknown.  
1765 II. (£10.)—CAPT. NELSON ZAMBRA, M.C., Hattingley House, Medstead, Hants, for Minley Mistress 1253 F.S., born in 1905, calved May 31, 1921, breeder unknown.  
1762 III. (£5.)—JOHN WILLIAM TOWLER, for Gort Curly 9th 2140, born May 14, 1915, calved June 7, 1921, bred by D. M. Rattray, Gortnashkehy, Ballybunion ; s. Gort Prince 2nd 718, d. Gort Curly 3383 by Gort Desmodon 597.  
1763 R. N.—JOHN WILLIAM TOWLER, for Gort Primrose 8th.  
H. C.—1759.

**Class 194.—Kerry Heifers, calved in 1919 or 1920.** [12 entries.]

1777 I. (£15.)—CAPTAIN NELSON ZAMBRA, M.C., Hattingley House, Medstead, Hants, for Hattingley Henry, born April 28, 1920 ; s. Waterville Lord 424, d. Ratmore Extract 2120 by Ratmore Arab 363.  
1769 II. (£10.)—LADY FITZGERALD, Buckland House, Faringdon, Berks, for Buckland Armistice (Vol. 20, p. 6), born May 29, 1919 ; s. Minley Victory 406, d. Buckland Amethyst 1876 by Dur Ratmore 280.  
1774 III. (£5.)—JOHN WILLIAM TOWLER, Wadlands Hall, Farsley, near Leeds, for Vaddy Caerbig 2nd 2494, born April 2, 1919, bred by Mrs. E. Robertson, Dogiean, Limavady, Co. Derry ; s. Vaddy Warre 419, d. Vaddy Caerbig 2104 by Vaddy Warrington 2nd 334.  
1767 R. N.—Laurence Currie, Minley Manor, Farnborough, for Minley Lodestar.  
H. C.—1775, 1776.

**Dexters.**

*N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.*

**Class 195.—Dexter Bulls, calved in or before 1919.** [12 entries.]

1751 I. (£15. & Champion<sup>3</sup>)—H. G. JONES, Downford, Mayfield, Sussex, for Downford Dandy 655, born in Jan., 1918, bred by R. T. Robertson, The Hatch, Malahide.  
1759 II. (£10.)—JOHN H. WOOTTON, Byford, Staunton-on-Wye, Hereford, for Byford Banner 697, born April 10, 1919 ; s. Bryan Lavengro 696, d. Byford Beauty 2721 F.S.  
1758 III. (£5.)—A. C. TATTERSALL, Wattingford, Attleham, for La Mancha Masher 702, red, born July 12, 1919, bred by Joseph O'Brien, Doney Carnny, Co. Dublin ; s. La Mancha Tiny Tim 668, d. La Mancha Golden Crest 2157 F.S.  
1782 R. N.—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for La Mancha True Blue.  
H. C.—1778, 1779. C.—1786.

**Class 196.—Dexter Bulls, calved in 1920.<sup>4</sup>** [11 entries.]

1790 I. (£15.)—MRS. FRANK ATHERTON BROWN, Bourton Hill House, Moreton-in-Marsh, for Bourton Hill Jock, born April 19 ; s. La Mancha Tiny Tim 668, d. La Mancha Well Well 2648.  
1794 II. (£10.)—LADY KATHLEEN HARE, Brokenhurst Park, Brokenhurst, Hants, for Brokenhurst Penny 2nd, born March 17 ; s. Brokenhurst Rufus 601, d. Harley Pentes, for Kingwood County Boy 264.  
1795 III. (£5.)—H. G. JONES, Downford, Mayfield, Sussex, for Downford Dorillas, born April 4 ; s. Downford Gipsy King 628, d. Downford Gipsy Queen 2485 F.S.  
1791 R. N.—EDWARD DAVIES, Pontarfran, Brecon, for Pontarfran Sunny Jim.  
H. C.—1792, 1799. C.—1800.

**Class 197.—Dexter Cows or Heifers (in-milk), calved in or before 1918.** [14 entries.]

1802 I. (£15. & R. N. for Champion<sup>5</sup>)—LADY KATHLEEN HARE, Brokenhurst Park, Brokenhurst, Hants, for Gort Peach 9th 2498, born Feb. 10, 1913, calved April 10, 1921, bred by D. M. Rattray, Ballybunion, Co. Cork ; s. Gort Fred 2nd (584), d. Gort Peach (3235).  
1807 II. (£10.)—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for La Mancha Madeline 2272, born March, 1918, calved May 1, 1921, breeder unknown.

<sup>1</sup> Prize given by the English Kerry and Dexter Cattle Society.

<sup>2</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 191-194.

<sup>3</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 195-198.

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1804 III. (25).—H. G. JONES, Downford, Mayfield, Sussex, for Downford *Ruellia* 2745 F.S., red, born in May, 1915, calved April 25, 1921, breeder unknown.  
1803 R. M.—H. G. JONES, for Downford *Dantzia*.  
H. C.—1804, 1812, 1813.  
C.—1805.

### Class 198.—*Dexter Heifers, calved in 1919 or 1920.* [17 entries.]

1820 I. (215).—LADY KATHLEEN HARR, Brokenhurst Park, Brokenhurst, Hants, for Brokenhurst *Woodbine* 2711, born Feb. 9, 1920; s. Brokenhurst *Rufus* 601, d. Gort *Woodblue* 7th 2498 by Gort *Fred* (560).  
1831 II. (210).—THEO. A. STEPHENS, Hookstle House, South Godstone, Surrey, for *Hookstle Miranda*, born March 26, 1920; s. *La Mancha Tiny Tim* 668, d. *Light Heart* 2651 F.S.  
1835 III. (25).—MRS. FRANK ATHURTON BROWN, Bourton Hill House, Moreton-in-Marsh, for *Bourton Hill Curls* 2996, born July 15, 1920; s. *La Mancha Tiny Tim* 668, d. *Bourton Hill Beryl* 2695.  
1827 R. M.—MRS. H. R. IPSELLY, Lyndsay's Farm, Ingatstone, Essex, for *Drumgaunah Wonder*.  
H. C.—1817, 1819.  
C.—1818, 1829.

## Blue Albion Cattle.<sup>1</sup>

### Class 199.—*Blue Albion Bulls, calved in or before 1920.* [7 entries.]

1834 I. (215).—E. CAUDWELL, Rowsley Hall Farm, Derbyshire, for *Mountain Prince*, born June 9, 1919; d. *Mountain Princess*.  
1837 II. (210).—CAPTAIN J. E. N. HOLDEN, The Grange, Southam, Warwick, for *Bradbourne Coalbrook*.  
1835 III. (25).—LT-COL W. E. HARRISON, Wychnor Park, Burton-on-Trent, for *Bank Chief*, born in 1918, bred by G. W. Axe, Bank House Farm, Hartington.  
1836 R. M.—MRS. CELIA WARD HENROT, Canham, Melton Mowbray, for *Destiny*.  
H. C.—1838.

### Class 200.—*Blue Albion Cows or Heifers (in-milk), calved in or before 1918.* [10 entries.]

1846 I. (215).—ARTHUR TRAFFORD, Dulands Farm, Bradbourne, Ashbourne, for *Bradbourne Joyce*, born in 1917, calved June 11, 1921.  
1839 II. (210).—GEORGE W. AXE, Bank House Farm, Hartington, nr. Buxton, for *Bradbourne Butterfly*, born in 1914, calved April 26, 1921, bred by A. Trafford, Bradbourne.  
1845 III. (25).—ARTHUR TRAFFORD, for *Bradbourne Gay Lass*, born May 20, 1918, calved June 8, 1921, bred by T. C. Bally, Buxton.  
1842 R. M.—CAPTAIN J. E. N. HOLDEN, The Grange, Southam, Warwick, for *Bank Flame*.  
H. C.—1844.

### Class 201.—*Blue Albion Heifers, calved in 1919 or 1920.* [7 entries.]

1855 I. (215).—HERBERT WHITLEY, Primley, Paignton, Devon, for *Primley Lilac*, born Aug. 18, 1919; s. *Beaconfield d.* Forget Me Not 24.  
1849 II. (210).—GEORGE W. AXE, Bank House Farm, Hartington, nr. Buxton, for *Bank Helen*, born May 12, 1919.  
1850 III. (25).—LT-COL W. E. HARRISON, Wychnor Park, Burton-on-Trent, for *Barton Daisy*, born Jan. 18, 1920; s. Andrew, d. Daisy.  
1852 R. M.—J. W. PURSEGLOVE & SON, Megdale Farm, Matlock, for *Megdale Maggie*.  
H. C.—1854.

## Milk Yield Classes.

### Class 202.—*Dairy Shorthorn Cows or Heifers.* [35 entries.]

901 I. (215).—LT-COL W. M. PRYOR, D.S.O., Lannock Manor, Stevenage, Herts, for *Betty* 24th (Vol. 64, p. 960), red, born Sept. 21, calved May 2, 1921, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; s. *Cranford Regulator* 119677, d. *Butty 26th* by Trickster 4th 118058.  
868 II. (210).—HENRY BICKFORD, for *Standeford Dolly* 23rd. (See Class 108.)  
871 III. (25).—CHIVERS & SONS, LTD., for *River Meadow Pippit* 4th. (See Class 108.)  
H. C.—867, 873, 878, 893, 903, 904, 922, 941.

### Class 203.—*Non-Pedigree Dairy Shorthorn Cows or Heifers.* [4 entries.]

948 I. (215).—D. ALDRIDGE, for *Sketchley Sapphire*. (See Class 111.)

952 II. (210).—J. M. STRICKLAND, for *Dairymaid* 3rd. (See Class 111.)

<sup>1</sup> Prizes given by the Blue Albion Cattle Society.

**Class 204.—Lincolnshire Red Shorthorn Cows or Heifers.** [14 entries.]

998 L. (£15.)—LT.-COL. SIR A. G. WEIGALL, K.C.M.G., Petwood, Woodhall Spa, for Anderby Kirkham (Vol. 23, p. 344), born March 1911, calved May 27, 1921, bred by C. Kirkham, Markby, Alford, Lincs.; *s.* Thimbleby Warlike 7951.  
 998 II. (£10.)—C. E. SCORER, Whitehall, Bracebridge Heath, Lincoln, for **Bracebridge No. 61** (Vol. 23, p. 350), born Dec. 16, 1910, calved June 11, 1921, bred by F. & C. E. Scorer, Whitehall, Bracebridge Heath; *s.* Normandy Milkman 10098, *d.* Bracebridge No. 62 by Blithedalebury Euripides 8784.  
 999 III. (£5.)—GEORGE COLEMAN, Wood Walton, Peterborough, for **Deeping Choice 9th**, born Sept. 1, 1911, calved May 30, 1921, bred by Geo. Frair, Deeping St. Nicholas, Spalding; *s.* Bussey Rupert, *d.* Deeping Choice 7th by Dowby Virtuoso 28th 4363.  
 H. C.—889, 935, 994, 1000.

**Class 205.—Devon Cows or Heifers.** [4 entries.]

1150 I. (£15.)—W. G. BURK, for **Suffragette 1st**. (See Class 130.)  
 1151 II. (£10.)—JOHN H. CHICK, for **Wynford Pill C. 292**. (See Class 130.)

**Class 206.—South Devon Cows or Heifers.** [2 entries.]

1174 I. (£15.)—WALTER HUNT, Tracey's Farm, Berry Pomeroy, Totnes, for **Milkmaid 4th 11644**, born May 7, 1912, calved May 24, 1921, bred by W. S. Harris, Ash Farm, Stoke Gabriel, Totnes; *s.* Dahlia Hero 2867, *d.* Milkmaid 6543.

**Class 207.—Longhorn Cows or Heifers.** [4 entries.]

1193 I. (£15.)—J. L. & A. RILEY, Putney, Ledbury, for **Putney Rudbeckia**, red and little white, born Dec. 18, 1915, calved June 13, 1921; *s.* Poles Czar 685, *d.* Putney Daisy (Vol. 8, p. 39) by Wadton Friar 552.  
 1195 II. (£10.)—W. HANSON SALE, for **Arden Cinderella**. (See Class 140.)

**Class 208.—Red Poll Cows or Heifers.** [14 entries.]

1326 I. (£15. & Champion.)—JOSEPH WARSON, Sudbourne Hall, Orford, Suffolk, for **Gressenhall Molly 4th**, born June 18, 1912, calved March 9, 1921, bred by the late J. E. Hill, Gressenhall, Norfolk; *s.* Gressenhall Storm King 8772, *d.* Sudbourne Spice 22384 by Sudbourne Spice 9751.  
 1327 II. (£10.)—JOSEPH WARSON, for **Gressenhall Red Berry 23508**, born July 14, 1911, calved March 9, 1921, bred by the late J. E. Hill, Gressenhall, Norfolk; *s.* Gressenhall Berwick 10174, *d.* Strawberry 3rd by Edgar 8949.  
 1322 III. (£5.)—MOJIB A. MONRISSON, D.S.O., Basildon Park, Goring, Reading, for **Kettleburgh Rose 2nd D.** (See Class 154.)  
 H. C.—1312, 1313, 1327, 1330.

**Class 210.—British Friesian Cows or Heifers.** [15 entries.]

1510 I. (£15. & R. N. for Champion.)—A. & J. BROWN, Haydon Hill, Aylesbury, for **Hedges Dutch Gossip 24960**, born July 15, 1916, calved April 20, 1921; *s.* Hedges (imported) Focke 2nd 3938, *d.* Colton Gossip 8840, by Fairlight Wilhelm 139. (See Class 175.)  
 1523 II. (£10.)—A. & J. WALLACE, for **Attmore Pleasant Lass**. (See Class 175.)  
 1522 III. (£5.)—JAMES RUSSELL, Market Harborough, for **Crawley Violet 3rd 20572**, born Oct. 22, 1915, calved March 13, 1921, bred by Henry A. Ward, Horton, Leighton Buzzard; *s.* Hedges Nero 2517, *d.* Crawley Violet 7136 by Knebworth Duke 363.  
 H. C.—1509.

**Class 211.—Jersey Cows or Heifers.** [24 entries.]

1636 I. (£15, Champion, & Special.)—R. BROOK WARD, Godinton, Ashford, Kent, for **Caper** (Vol. 31, p. 244), whole colour, born Jan. 24, 1917, calved April 9, 1921, bred by H. Padwick, West Ashling, Chichester; *s.* Capricorn 10392, *d.* Flittermouse by Kumassie 7895.  
 1616 II. (£10.)—MISS EVELYN, Wotton House, Dorking, for **Fairlawne Hussey** (Vol. 30, p. 273), broken colour, born August 8, 1916, calved Feb. 11, 1921, bred by W. M. Cazalet, Fairlawne, Tondridge, *s.* Sir Toby 12154, *d.* Hussey 1364 by MacDougal 9333.  
 1637 III. (£5.)—R. BROOK WARD, for **Evergreen**. (See Class 182.)  
 H. C.—1628, 1632, 1634, 1642, 1648, 1649, 1650.

**Class 212.—Guernsey Cows or Heifers.** [16 entries.]

1712 I. (£15. & R. N. for Champion.)—H.R.H. THE DUCHESS OF ALBANY, Claremont, Esher, for **Bostock Victoria 11890**, fawn and white, born March 20, 1916, calved April 10, 1921, bred by H. H. Latty, Bostock, Porthcurnow; *s.* Tregonning Governor of the Blego 2566, *d.* Bostock Valentine 10516 by Godolphin Sambo 2450.

<sup>1</sup> Prizes given by the Devon Cattle Breeders' Society.

<sup>2</sup> Champion Prize of £20, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Milk Yield Competitions.

<sup>3</sup> Champion Prize of £20, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Ayrshire, Jersey and Guernsey Milk Yield Competitions.

<sup>4</sup> Special Prize of £10 10s. given by the Royal Jersey Agricultural Society for the best Jersey Cow in Class 211 obtaining the greatest number of points.

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1713 **II. (£10.)**—H.R.H. THE DUCHESS OF ALBANY, for Trequeau Lady 2nd. (See Class 188.)  
 1716 **III. (£5.)**—G. F. FERNAND, Morland Hall, Alton, for Morland Diamond 10847, fawn and white, born July 21, 1914, calved April 24, 1921; *s.* Chieftain of Hawkley 2238, *d.* Rushington Shamrock 3rd 8243 *by* Bonnies Pride 1803.  
*H. C.*—1715, 1719, 1720, 1723, 1725, 1729.

**Class 213.—Kerry Cows or Heifers.** [4 entries.]

1762 **I. (£15, & Champion.)**—JOHN WILLIAM TOWLER, for Gort Curly 9th. (See Class 193.)  
 1764 **I. (£10, & R. N. for Champion.)**—JOHN WILLIAM TOWLER, for Wyresdale Clover. (See Class 193.)  
 1763 **III. (£5.)**—JOHN WILLIAM TOWLER, for Gort Primrose 8th 2260, born March 16, 1912, calved June 11, bred by D. M. Ratray, Gortnaskehy, Ballybunion; *s.* Gort Peter 688, *d.* Gort Primrose 3rd 3462 *by* Gort Earl 597.  
*H. C.*—1759, 1765.

**Class 214.—Dexter Cows or Heifers.** [3 entries.]

1807 **I. (£15.)**—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for La Mancha Madeline. (See Class 197.)  
 1811 **II. (£10.)**—E. P. PETTOW, Woodcote Lodge, near Kenilworth, for Patti 5th 2662, born Jun. 21, 1918, calved May 6, 1921; *s.* Grinstead Tramp 545, *d.* Patti 2nd 2142 *by* Pagani 532.

**Butter Tests.**

[96 entries.]

**Class 215a.—Cows, exceeding 900 lb. live weight.**

1636 **I. (£15, & G. M.)**—R. BRUCE WARD, for Caper. (See Class 211.)  
 1174 **II. (£10.)**—WALTER HUNT, for Milkmaid 4th. (See Class 206.)  
 996 **III. (£5.)**—C. E. SCORER, for Bracebridge No. 61. (See Class 204.)  
 Certificates of Merit<sup>2</sup>—1629.

*H. C.*—903, 941, 981, 989, 993, 998, 1000, 1150, 1523, 1722, 1763.

**Class 215b.—Cows, not exceeding 900 lb. live weight.**

1637 **I. (£15, & B. M.)**—R. BRUCE WARD, for Evergreen. (See Class 182.)  
 1635 **II. (£10.)**—LAURENCE E. TUBBS, The Priory, Stevenage, Herts, for Stapleton Molle (Vol. 29, p. 103), whole colour, born Oct. 2, 1917, calved March 21, 1921; *s.* Star of Iris 12456, *d.* Stapleton Glory<sup>3</sup> *by* Virginias Golden Fern 11884.  
 1632 **III. (£5.)**—THE HON. MRS. MURRAY SMITH, Gunthorpe Hall, Market Harborough, for Silver Mary (Vol. 31, p. 391), whole colour, born June 14, 1917, calved Oct. 20, 1920; *s.* Silver Lad 12767, *d.* Marigold 23349 *by* Bridgadier Currents 9161.  
 1616 **(S. M.)**—MRS. EVELYN, Wotton House, Dorking, for Fairlawne Hussy. Certificates of Merit<sup>2</sup>—1634, 1649.

**GOATS.<sup>4</sup>**

**Class 216.—Male Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.** [2 entries.]

1856 **I. (£3.)**—MISS K. PELLY, Theydon Piac, Epping, for Theydon Angus 1136, born Feb. 22, 1919; *s.* Sadberge Marcus Coriolanus 1003, *d.* Regius Aganippe 895 *by* Wigmore Norman 562.  
 1857 **II. (£2.)**—MRS. C. PICKARD, Middle Brow Top, Quernmore, Lancaster, for Edenbreck Hiawatha 1044, born Dec. 17, 1917; *s.* Sadberge Romulus 738, *d.* Forest Minimink 591 *by* Boxhill Noodle 526.

**Class 217.—Male Goats, any other variety, over 2 years old.** [3 entries.]

1858 **I. (£3, & Champion.)**—BARONESS BURTON, Dochfour, Inverness, for Dochfour Aroganee 3503, British Saanen, born Feb. 16, 1919; *s.* Champion Proud 2853, *d.* Rockcrest Mollio 3988 *by* Ballywater Nectarine 1910.

<sup>2</sup> Champion Prize of £10, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Kerry and Dexter Milk Yield Competitions.

<sup>3</sup> Gold Medal, Silver Medal, and Bronze Medal given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

<sup>4</sup> Certificates of Merit given by the English Jersey Cattle Society for Jersey Cows, not being Prize Winners, obtaining the following points: Cows five years old and upwards, 35 points; Cows under five years old, 30 points.

<sup>5</sup> Gold Medal, Silver Medal, and Bronze Medal given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

<sup>6</sup> Certificates of Merit given by the English Jersey Cattle Society for Jersey Cows, not being Prize Winners, obtaining the following points: Cows five years old and upwards, 35 points; Cows under five years old, 30 points.

<sup>7</sup> £30 towards these Prizes were given by the British Goat Society.

<sup>8</sup> Challenge Certificate given by the British Goat Society for the best Male Goat.

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1860 IL. (23.)—**Mrs. G. M. SOAMES**, Long Buckley Wharf, Rugby, for Pytchley *Carusa* 3529, British Alpine, born Feb. 19, 1919; *s.* Proud 2353, *d.* Mayfield Carmen 2538 by Cherub. 1859 III. (51.)—**HUGH B. SIMPSON**, Hank Barn Farm, Wards, near Rochdale, for *Manor Rex* 3552, Anglo-Nubian-Swiss, born March 4, 1919, bred by Mrs. Chatwood; *s.* Mayfield Tipperary 2418, *d.* Ridings Renée 2291 by Ridings Rugus 1242.

**Class 218.—Male Goats, any variety, above 1 year, and not exceeding 2 years old.** [4 entries.]

1864 I. (23, & R. N. for Champion<sup>1</sup>)—**E. A. WALMSLEY**, The Priory Farm, Mattingley Green, Hartley Wintney, Hants, for Atherton Faith 2324, British Alpine, born Feb. 19, 1920; *s.* Tremode St. Germain 3139, *d.* Trustee of Basbly 3074 by Proud 2353. 1862 II. (23.)—**OTHEL R. PAYNE**, Pegglesworth, Andoverford, Glos., for Wayward of Weston 4354, British Alpine, born April 9, 1920, bred by Miss G. Chamberlain, Weston, Lyndhurst, Hants; *s.* Edenbreck Pinck 3007, *d.* Prelude of Basbly 3073 by Proud 2353. 1861 III. (51.)—**MRS. SYDNEY MACDONALD**, Garrochty, Kingarth, Isle of Bute, for Therdon Tango 1308, Anglo-Nubian, born May 3, 1920, bred by Miss Pelly, Therdon, Epping; *s.* Therdon Angus 1138, *d.* Edenbreck Thyme 995 by Edenbreck Marcus 933. 1863 R. N.—**MISS K. PELLY**, Therdon Place, Epping, for Dunwich Beau.

**Class 219.—Male Kids, any variety, not exceeding 1 year old.** [6 entries.]

1865 I. (23, & Champion<sup>2</sup>)—**BARONESS BURTON**, Dochfour, Inverness, for Dochfour Onyx, British Alpine, born March 16, 1921; *s.* Graunge Granite 2369, *d.* Withdean Topsy 2662 by Leazes Luck 1754. 1870 II. (22.)—**E. A. WALMSLEY**, The Priory Farm, Mattingley Green, Hartley Wintney, Hants, for Atherton Faith 2324, British Alpine, born Feb. 3, 1921; *s.* Prophet of Bushley 3775, *s.* Towcester Gladys 2738 by Orange Granite 2369. 1866 III. (51.)—**MRS. SYDNEY MACDONALD**, Garrochty, Kingarth, Isle of Bute, for Garrochty Rosalind, British Alpine, born March 14, 1921; *s.* Dochfour Arrogance 3503, *d.* Tea Rose of Nothe 3464 by Copthorne Brigadier 2608. 1860 R. N.—**Mrs. C. PICKARD**, Middle Brow Top, Quartermore, Lancaster, for Edenbreck Tamarkan.

**Class 220.—Female Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.** [11 entries.]

1872 I. (23.)—**MRS. MABEL GRACE**, Silver Beach, East, Horne Bay, for Brentmoor Buni 1031, born March 26, 1917, kidded May 8, 1920, bred by W. S. Horne, Nash Court, Westwell; *s.* Edenbreck Midas Cig's Winner 740, *d.* Nash Magpie 997 by Woodlands Marauder 742. 1871 II. (22.)—**MRS. HAROLD GLADSTONE**, Bulk Road, Lancaster, for Saberge Mavis 817, born March 17, 1915, kidded May 21, 1921, bred by Mrs. Reginald Pease, Sledwich, Barnard Castle; *s.* Saberge Romulus 738, *d.* Saberge Phalerope 679 by Sedgemere Viking 566. 1877 III. (21.)—**MISS K. PELLY**, Therdon Place, Epping, Essex, for Regius Aganippe 805, born Jan. 4, 1915, kidded May 14, 1921, bred by H. King, The White Cottage, Lenham, Kent; *s.* Wigmore Norman 562, *d.* Forest Bellona 673 by Forest Reetus 340. 1881 R. N.—**MISS K. PELLY**, for Therdon Tilda.

**Class 221.—Female Goats, Swiss or Anglo-Swiss, over 2 years old.** [4 entries.]

1885 I. (23.)—**OTHEL R. PAYNE**, Pegglesworth, Andoverford, Glos., for Firma 2452, born March 10, 1914, kidded Feb. 27, 1921, bred by Mrs. Lubbock, Bassett, Farnborough, Kent; *s.* Brickett Cain 1573, *d.* Firma 215 by Sedgemere Garibaldi 151.

**Class 222.—Female Goats, British Alpine, over 2 years old.** [6 entries.]

1891 I. (23, & R. N. for Champion<sup>3</sup>)—**E. A. WALMSLEY**, The Priory Farm, Mattingley Green, Hartley Wintney, Hants, for Atherton Faith 2324, born May 3, 1918, kidded Dec. 1, 1920; *s.* Graunge Granite 2369, *d.* Buckshot Francesca 2653 by Woodfalls Francis 2332. 1886 II. (22.)—**MRS. ARTHUR ABBEY**, Didgegreen Hall, Roydon, Essex, for Preference 2779, born March 28, 1917, kidded June 1, 1921, bred by Miss Pope, Basbly Lodge, New Milton, Hants; *s.* Leazes Lucky Halton 2575, *d.* Prejudice 2500 by Leazes Luck 1754. 1888 III. (21.)—**MRS. G. M. SOAMES**, Long Buckley Wharf, Rugby, for Pytchley Cinderella 2768, born Jan. 26, 1917, kidded April 23, 1921; *s.* Performer 2562, *d.* Mayfield Carmen 2538 by Cherub. 1889 R. N.—**Mrs. G. M. SOAMES**, for Pytchley Clara.

**Class 223.—Female Goats, any other variety, over 2 years old, not eligible for Classes 220 to 222.** [10 entries.]

1892 I. (23, & Champion<sup>4</sup>)—**BARONESS BURTON**, Dochfour, Inverness, for Withdean Topsy 2662, Anglo-Nubian-Swiss, born April 30, 1916, kidded March 16, 1921, bred by Dr. Clutterbuck, Mayfield, Surrendon Road, Brighton; *s.* Leazes Luck 1754, *d.* Withdean Queen 1834 by Sedgemere Princephlo 1365.

<sup>1</sup> Challenge Certificate given by the British Goat Society for the best Male Goat.

<sup>2</sup> Bronze Medal given by the British Goat Society for the best Kid.

<sup>3</sup> Challenge Certificate given by the British Goat Society for the best Female Goat, over 2 years old, that has borne a Kid.

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1901 II. (22)—E. A. WALMSLEY, The Priors Farm, Mattingley Green, Hartley Wintney, Hants, for Towcester Snowdrop 238, born May 6, 1919, kidded Feb. 12, 1921, bred by Mrs. Penney, Great North Court, Towcester; *s.* Proud 2363, *d.* Towcester Gladys 2798 by Grange Granite 2386.

1899 III. (15)—E. A. WALMSLEY, for Athertonstone Charity, born April 24, 1918, kidded Jan. 31, 1921; *s.* Proud 2353, *d.* Drusilla.

1897 R. N.—CYRIL R. PAYNE, Peggleshaworth, Andoversford, Glos., for Prudent of Bashley. C.—1893.

**Class 224.**—*Goatlings, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, above 1 year and not exceeding 2 years old.* [7 entries.]

1908 I. (23, & R. N. for Champion.)—MISS K. PELLY, Theydon Place, Epping, for Theydon 918, born Feb. 12, 1920; *s.* Sadberge Marcus Coriolanus 1003, *d.* Sledwich Chloe 918, by Sledwich Berserker 678.

1908 II. (22)—WILLIAM S. HORNE, Nash Court, Westwell, Ashford, Kent, for Nash Bellona 1275, born March 25, 1920; *s.* Edenbreck Danann 843, *d.* Nash Bella 1112 by Edenbreck Midas 740.

1906 III. (51)—MISS K. PELLY, for Theydon Annette 1304, born May 6, 1920; *s.* Sadberge Marcus Coriolanus 1003, *d.* Regius Aganippe 895 by Wigmore Norman 562.

1907 R. N.—MISS K. PELLY, for Theydon Beauty. H. C.—1903.

**Class 225.**—*Goatlings, any other variety, above 1 year and not exceeding 2 years old, not eligible for Class 224.* [8 entries.]

1909 I. (53, & Champion.)—MRS. ARTHUR ABBEY, Diddigener Hall, Roydon, Essex, for Diddigener Duble 4233, British Alpine, born March 9, 1920; *s.* Prophet of Bashley 3775, *d.* Wuldean Countess 2355 by leases Lucky Halton 2575.

1915 II. (23)—MRS. G. M. SOAMES, Long Bucky Wharf, Rugby, for Pritchley Comet 4021, British Alpine, born Jan. 26, 1920; *s.* Pritchley Caruso 2523, *d.* Mayfield Carmen 2338 by Cherub.

1916 III. (51)—E. A. WALMSLEY, The Priors Farm, Mattingley Green, Hartley Wintney, Hants, for Athertonstone Dinah 4241, Anglo-Nubian, born Feb. 28, 1920; *s.* Puck of Bashley 3605, *d.* Holstead End 3274 by Zoyland Benson 2873.

1910 R. N.—MRS. ARTHUR ABBEY, for Tremedda Lalage 2nd. H. C.—1913. C.—1911.

**Class 226.**—*Female Kids, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, not exceeding 1 year old.* [2 entries.]

1917 I. (53)—MRS. MABEL GRACE, Silver Beach, East Cliff, Horne Bay, for Herne Bay Dejah Thoris 8430, born Jan. 1, 1921; *s.* Ruritania Hawthorne 1059, *d.* Nash Magpie 991, by Woodlands Marauder 742.

1918 II. (22)—MISS K. PELLY, Theydon Place, Epping, for Theydon Tangerina 1382, born Feb. 21, 1921; *s.* Dunwich Bear 1274, *d.* Theydon Treasure 1191 by Sadberge Marcus Coriolanus 1003.

**Class 227.**—*Female Kids, any other variety, not exceeding 1 year old, not eligible for Class 226.* [5 entries.]

1922 I. (23, & R. N. for Champion.)—MRS. G. M. SOAMES, Long Bucky Wharf, Rugby, for Pritchley Twilight 6236, British Alpine, born July 4, 1920; *s.* Pritchley Caruso 3329, *d.* Nanyuki Motry by Nanyuki Simba.

1923 II. (22)—E. A. WALMSLEY, The Priors Farm, Mattingley Green, Hartley Wintney, Hants, for Athertonstone Pandora, born Feb. 3, 1921; *s.* Prophet of Bashley 3775, *d.* Towcester Gladys 2798 by Grange Granite 2386.

1921 III. (51)—CYRIL R. PAYNE, Peggleshaworth, Andoversford, Glos., for Cintra Prenda, British Saanen, born Feb. 7, 1921; *s.* Prophet of Bashley 3775, *d.* Prudent of Bashley 3074 by Proud 2353.

1920 R. N.—CYRIL R. PAYNE, for Cintra Pepita. H. C.—1919.

**Milk Yield Prizes.**

**Class 228.**—*Goats that have won before May 2, 1921, a 1st, 2nd, or 3rd Prize in any milking competition.* [6 entries.]

1872 I. (23)—MRS. MABEL GRACE, for Brentmoor Buntly. (See Class 220.)  
 1877 II. (22)—MISS K. PELLY, for Regius Aganippe. (See Class 220.)  
 1871 III. (51)—MRS. HAROLD GLADSTONE, for Sadberge Maris. (See Class 220.)  
 1891 R. N.—E. A. WALMSLEY, The Priors Farm, Mattingley Green, Hartley Wintney, Hants, for Athertonstone Faith.

<sup>1</sup> Bronze Medal given by the British Goat Society for the best Goating.

<sup>2</sup> Bronze Medal given by the British Goat Society for the best Kid.

**Class 229.—Goats, not eligible for Class 228.** [17 entries.]

1886 I. (23)—MRS. ARTHUR ABBEY, for Preference. (See Class 222.)  
 1899 II. (22)—E. A. WALMSLEY, for Atherstone Charity. (See Class 223.)  
 1901 III. (21)—E. A. WALMSLEY, for Worcester Showdrop. (See Class 223.)  
 1888 R. N.—CYRIL R. PAYNE, Peggeweorth, Andoversford, Glos., for Firma.  
 H. C.—1889, 1897.

**SHEEP.**

**Oxford Downs.**

**Class 230.—Oxford Down Shearling Rams.** [10 entries.]

1928 I. (\$10), & 1927 II. (25)—FREDERICK PENSON, Taston, Charlbury, Oxon.  
 1928 III. (23)—HUGH W. STILGOE, The Grounds, Adderbury, Banbury.  
 1924 R. N.—CAPTAIN R. B. BRASSEY, Heythrop Park, Chipping Norton.  
 H. C.—1929. C.—1930, 1931.

**Class 231.—Oxford Down Ram Lambs.<sup>1</sup>** [13 entries.]

1942 I. (\$10), 1941 III. (23), & 1943 R. N.—THE DUKE OF MARLBOROUGH, K.G., Blenheim Palace, Woodstock.  
 1934 II. (25)—HENRY AKERS & CO., Moat House, Black Bourton, Clanfield, Oxon.  
 H. C.—1937, 1945. C.—1938.

**Class 232.—Three Oxford Down Ram Lambs.** [12 entries.]

1947 I. (\$10)—HENRY AKERS & CO., Moat House, Black Bourton, Clanfield, Oxon.  
 1951 II. (25)—R. W. HOBES & SONS, Kelmscott, Lechlade.  
 1957 III. (23)—SYDNEY READING, Langford, Lechlade, Glos.  
 1958 R. N.—THE DUKE OF MARLBOROUGH, K.G., Blenheim Palace, Woodstock.  
 C.—1954.

**Class 233.—Three Oxford Down Shearling Ewes.** [10 entries.]

1959 I. (\$10)—CAPTAIN R. B. BRASSEY, Heythrop Park, Chipping Norton.  
 1988 II. (25)—HUGH W. STILGOE, The Grounds, Adderbury, Banbury.  
 1985 III. (23)—FREDERICK PENSON, Taston, Charlbury, Oxon.  
 1983 R. N.—THE DUKE OF MARLBOROUGH, K.G., Blenheim Palace, Woodstock.  
 H. C.—1987. C.—1982.

**Class 234.—Three Oxford Down Ewe Lambs.** [12 entries.]

1960 I. (\$10)—HENRY AKERS & CO., Moat House, Black Bourton, Clanfield, Oxon.  
 1977 II. (25)—THE DUKE OF MARLBOROUGH, K.G., Blenheim Palace, Woodstock.  
 1973 III. (23)—R. W. HOBES & SONS, Kelmscott, Lechlade.  
 1976 R. N.—JOSEPH JOHNSTON, Ham Court, Bampton, Oxon.  
 H. C.—1976. C.—1979, 1980.

**Shropshires.**

**Class 235.—Shropshire Two Shear Rams.<sup>2</sup>** [8 entries.]

1987 I. (\$10)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.  
 1982 II. (25)—JAMES JOSEPH BREWERY, Llysymcirchion, Trefnant, for ram, bred by F. Bibby, Hardwicke Grange, Shrewsbury.  
 1981 R. N.—THE EXOS. OF THE LATE A. S. BERRY, Shenstone Hall, Lichfield.  
 H. C.—1983, 1988.

**Class 236.—Shropshire Shearling Rams.** [18 entries.]

2005 I. (\$10, Champion) & (Champion)—E. CRAIG TANNER, Eton-on-Severn, Shrewsbury.  
 1989 II. (23, & R. N. for Champion<sup>3</sup>)—THE EXOS. OF THE LATE A. S. BERRY, Shenstone Hall, Lichfield.  
 2903 III. (23)—E. & F. NOCK, Hardington Hall, Shifnal.  
 1990 R. N.—P. & F. BIBBY, Hardwicke Grange, Shrewsbury.  
 H. C.—1996, 2002, 2004. C.—1991, 2000, 2001.

**Class 237.—Three Shropshire Shearling Rams.** [15 entries.]

2021 I. (\$10)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.  
 2020 II. (25)—E. CRAIG TANNER, Eton-on-Severn, Shrewsbury.  
 2012 III. (23)—JAMES JOSEPH BREWERY, Llysymcirchion, Trefnant, N. Wales.  
 2014 R. N.—JESSE W. F. INGE, Thoresby Hall, Tamworth.  
 H. C.—2010, 2017. C.—2007, 2008, 2018.

<sup>1</sup> Prizes given by the Oxford Down Sheep Breeders' Association.

<sup>2</sup> Prizes given by the Shropshire Sheep Breeders' Association.

<sup>3</sup> Champion Silver Medal given by the Shropshire Sheep Breeders' Association for the best Ram in Classes 235 and 230.

<sup>4</sup> The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the Shropshire Sheep Breeders' Association for the best exhibit of Shropshire Sheep in Classes 235-240.

**Class 238.—Three Shropshire Ram Lambs.<sup>1</sup> [10 entries.]**

2031 I. (£10.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.  
 2022 II. (£5.)—R. E. BIRCH, Mice Elwy, St. Asaph.  
 2027 R. N.—KENNETH W. MILNES, The Field, Hereford.  
 H. C.—2023, 2028.

**Class 239.—Three Shropshire Shearling Ewes. [11 entries.]**

2039 I. (£10.) & R. N. for Champion.—MRS. W. F. INGB, Thorpe Hall, Tamworth.  
 2055 II. (£5.)—JAMES JOSEPH BIRCH, Llyncirch, Treffnant, N. Wales.  
 2040 III. (£3.)—KENNETH W. MILNES, The Field, Hereford.  
 2042 R. N.—E. CRAIG TANNER, Eytton-on-Severn, Shrewsbury.  
 H. C.—2032, 2037.

**Class 240.—Three Shropshire Ewe Lambs. [12 entries.]**

2050 I. (£10.)—KENNETH W. MILNES, The Field, Hereford.  
 2052 II. (£5.)—NORMAN J. NUNNERLEY, Tern Hill House, Market Drayton.  
 2051 III. (£3.)—E. & F. NOCK, Harrington Hall, Shifnal.  
 2049 R. N.—MRS. W. F. INGB, Thorpe Hall, Tamworth.  
 H. C.—2043. C.—2048, 2053.

**Southdowns.**

**Class 241.—Southdown Two Shear Rams.<sup>2</sup> [7 entries.]**

2059 I. (£10.) & Champion.—LADY LUDLOW, Luton Hoo, Beds.  
 2055 II. (£5.)—HIS MAJESTY THE KING, Sandringham.  
 2050 III. (£3.)—R. S. RICKS, Wilbraham Temple, Cambs.  
 2058 R. N.—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.

**Class 242.—Southdown Shearling Rams. [15 entries.]**

2065 I. (£10.) & R. N. for Champion.—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.  
 2068 II. (£5.)—LADY FITZGERALD, Buckland, Faringdon, Berks.  
 2072 III. (£3.)—R. N.—R. S. HICKS, Wilbraham Temple, Cambs.  
 H. C.—2062, 2074. C.—2074, 2075.

**Class 243.—Three Southdown Shearling Rams.<sup>3</sup> [8 entries.]**

2079 I. (£10.)—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.  
 2082 II. (£5.)—R. S. RICKS, Wilbraham Temple, Cambs.  
 2077 III. (£3.)—HIS MAJESTY THE KING, Sandringham.  
 2081 R. N.—LADY FITZGERALD, Buckland, Faringdon, Berks.  
 H. C.—2083.

**Class 244.—Three Southdown Ram Lambs. [11 entries.]**

2088 I. (£10.)—THE EARL OF DERBY, K.G., Hatchfield Farm, Newmarket.  
 2087 II. (£5.)—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.  
 2085 III. (£3.)—HIS MAJESTY THE KING, Sandringham.  
 2084 R. N.—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester.  
 H. C.—2086.

**Class 245.—Three Southdown Shearling Ewes. [10 entries.]**

2098 I. (£10.) & Champion.—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.  
 2096 II. (£5.) & R. N. for Champion.—HIS MAJESTY THE KING, Sandringham.  
 2101 III. (£3.)—R. S. HICKS, Wilbraham Temple, Cambs.  
 2100 R. N.—E. C. FAIRWEATHER, Avisford Park, Arundel.  
 H. C.—2105. C.—2099, 2104.

**Class 246.—Three Southdown Ewe Lambs. [12 entries.]**

2108 I. (£10.)—SIR JEREMIAH COLMAN, Bt., Gatton Park, Surrey.  
 2115 II. (£5.)—LADY LUDLOW, Luton Hoo, Beds.  
 2109 III. (£3.)—THE EARL OF DERBY, K.G., Hatchfield Farm, Newmarket.  
 2106 R. N.—HIS MAJESTY THE KING, Sandringham.

<sup>1</sup> Prizes given by the Shropshire Sheep Breeders' Association.

<sup>2</sup> The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the Shropshire Sheep Breeders' Association for the best exhibit of Shropshire Sheep in Classes 235-240.

<sup>3</sup> Prizes given by the Southdown Sheep Society.

<sup>4</sup> Champion Gold Medal, value £10 10s. (or £10 10s. in cash) given by the Southdown Sheep Society for the best Ram in Classes 241 and 242.

<sup>5</sup> Silver Medal given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 245 and 246.

### Hampshire Downs.

#### Class 247.—Hampshire Down Two Shear Rams.<sup>1</sup> [5 entries.]

2121 I. (£10).—THE HON. LADY HULSE, Breamore House, Breamore, Hants, for Joffre, bred by Mrs. Jervoise, Herrard Park, Basingstoke.  
 2122 II. (£5).—JAMES WHITE, Foxhill Estate, Swindon, for ram, bred by James Flower, Chilmark, Salisbury; & Fresh Tenant.  
 2120 R. N.—THE HON. LADY HULSE, for Blighty.

#### Class 248.—Hampshire Down Shearling Rams. [14 entries.]

2132 I. (£10).—V. T. THOMPSON, Norton Manor, Sutton Scotney, Hants.  
 2126 II. (£5).—THE HON. LADY HULSE, Breamore House, Breamore, Hants, for Breamore Bumper.  
 2123 III. (£3).—H. W. BISHOP & J. W. MEASURES, Pendley Stock Farms, Tring.  
 2134 R. N.—THE TRUSTEES OF THE LORD WANDSWORTH AGRICULTURAL COLLEGE, Long Sutton, Basingstoke.  
 H. C.—2124, 2127, 2128, 2135.

#### Class 249.—Hampshire Down Ram Lambs.<sup>1</sup> [14 entries.]

2141 I. (£10, & Champion).—THE HON. LADY HULSE, Breamore House, Breamore, Hants.  
 2148 II. (£5). & 2147 R. N.—V. T. THOMPSON, Norton Manor, Sutton Scotney, Hants.  
 2149 III. (£4).—THE TRUSTEES OF THE LORD WANDSWORTH AGRICULTURAL COLLEGE, Long Sutton, Basingstoke.  
 2146 IV. (£2).—GEORGE PHILIPPI, Crawley Court, near Winchester.  
 H. C.—2137, 2140, 2142, 2145, 2150.

#### Class 250.—Three Hampshire Down Ram Lambs. [10 entries.]

2151 I. (£10, & R. N. for Champion).—H. W. BISHOP & J. W. MEASURES, Pendley Stock Farms, Tring.  
 2154 II. (£5).—MRS. JERVOISE, Herrard Park, Basingstoke.  
 2159 III. (£3).—THE TRUSTEES OF THE LORD WANDSWORTH AGRICULTURAL COLLEGE, Long Sutton, Basingstoke.  
 2158 R. N.—V. T. THOMPSON, Norton Manor, Sutton Scotney, Hants.  
 H. C.—2153, 2157, 2160.  
 C.—2155, 2156.

#### Class 251.—Three Hampshire Down Shearling Ewes. [8 entries.]

2161 I. (£10), & 2162 III. (£3).—H. W. BISHOP & J. W. MEASURES, Pendley Stock Farms, Tring.  
 2165 II. (£5). & 2166 R. N.—V. T. THOMPSON, Norton Manor, Sutton Scotney, Hants.  
 H. C.—2163, 2168.

#### Class 252.—Three Hampshire Down Ewe Lambs. [10 entries.]

2177 I. (£10).—THE TRUSTEES OF THE LORD WANDSWORTH AGRICULTURAL COLLEGE, Long Sutton, Basingstoke.  
 2171 II. (£5).—THE HON. LADY HULSE, Breamore House, Breamore, Hants.  
 2175 III. (£3).—GEORGE PHILIPPI, Crawley Court, nr. Winchester.  
 2169 R. N.—H. W. BISHOP & J. W. MEASURES, Pendley Stock Farms, Tring.  
 H. C.—2172, 2176.  
 C.—2173, 2174, 2178.

### Suffolks.<sup>3</sup>

#### Class 254.—Suffolk Shearling Rams. [5 entries.]

2179 I. (£10).—ROBERT L. BARCLAY, C.B.E., Higham, Bury St. Edmunds, for Higham Quality 1st, bred by H. E. Smith, Walton Grange, Suffolk.  
 2180 II. (£5).—ROBERT L. BARCLAY, C.B.E., for Higham Victor 2nd.  
 2181 III. (£5).—CHIVERS & SONS, LTD., Histon, Cambridge.  
 2183 R. N.—S. R. SHERWOOD, Playford, Ipswich.

#### Class 255.—Suffolk Ram Lambs. [13 entries.]

2195 I. (£10).—W. P. PAUL, Kitton Lodge, Ipswich.  
 2137 II. (£5).—THE HON. SIR ERNEST CASELL, Moulton Paddocks, Newmarket.  
 2191 III. (£3). & 2192 R. N.—G. A. GOODCHILD, Great Yeldham, Essex.  
 2189 IV. (£2).—CHIVERS & SONS, LTD., Histon, Cambridge.  
 H. C.—2188, 2190.  
 C.—2194.

<sup>1</sup> Prizes given by the Hampshire Down Sheep Breeders' Association.

<sup>2</sup> Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 249, 250 and 252.  
<sup>3</sup> £42 towards these Prizes were given by the Suffolk Sheep Society.

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**Class 256.—Three Suffolk Ram Lambs.** [7 entries.]

2202 I. (£10.)—W. F. PAUL, Kirton Lodge, Ipswich.  
2201 II. (£5.)—G. A. GOODCHILD, Great Yeldham, Essex.  
2198 III. (£3.)—THE RIGHT HON. SIR ERNEST CASSEL, Moulton Paddocks, Newmarket.  
2205 IV. (£2.)—S. J. C. SHERWOOD, Playford, Ipswich.  
2200 V. N.—CHARLES COUSINS, Stisted, Braintree, Essex.  
H. C.—2196.

**Class 257.—Three Suffolk Shearling Ewes.** [4 entries.]

2205 I. (£10.)—CHIVERS & SONS, LTD., Histon, Cambridge.  
2204 II. (£5.)—ROBERT L. BARCLAY, C.B.E., Higham, Bury St. Edmunds.  
2207 III. (£3.)—W. F. PAUL, Kirton Lodge, Ipswich.

**Class 258.—Three Suffolk Ewe Lambs.** [8 entries.]

2200 I. (£10.)—THE RIGHT HON. SIR ERNEST CASSEL, Moulton Paddocks, Newmarket.  
2211 II. (£5.)—CHARLES COUSINS, Stisted, Braintree, Essex.  
2210 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambridge.  
2212 IV. (£2.)—G. A. GOODCHILD, Great Yeldham, Essex.  
2215 V. N.—S. H. SHERWOOD, Playford, Ipswich.  
H. C.—2214. C.—2213.

**Dorset Downs.**

**Class 259.—Dorset Down Shearling Rams.** [6 entries.]

2219 I. (£10.)—THOMAS R. SPILLER, Luccombe Farm, Milton Abbas, Blandford.  
2231 II. (£5.)—ROBERT N. TORY, Anderson, Blandford.  
2220 V. N.—RANDOLPH TORY, Charlsworth Manor, Blandford.

**Class 260.—Three Dorset Down Shearling Ewes.** [5 entries.]

2225 I. (£10.)—THOMAS R. SPILLER, Luccombe Farm, Milton Abbas, Blandford.  
2226 II. (£5.)—ROBERT N. TORY, Anderson, Blandford.

**Class 261.—Three Dorset Down Ram Lambs.**<sup>1</sup> [6 entries.]

2228 I. (£10.) & 2229 V. N.—THOMAS R. SPILLER, Luccombe Farm, Milton Abbas, Blandford.  
2231 II. (£5.)—RANDOLPH TORY, Charlsworth Manor, Blandford.  
H. C.—2230.

**Dorset Horns.**

**Class 262.—Dorset Horn Shearling Rams, born on or after November 1, 1919.** [2 entries.]

2234 I. (£10.) & 2233 II. (£5.)—FRANK J. MERSON & SON, Farrington, North Petherton, Bridgwater.

**Class 263.—Three Dorset Horn Ram Lambs, born on or after November 1, 1920.** [2 entries.]

2235 I. (£10.) & Champion.<sup>2</sup>—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.

2236 II. (£5.)—FRANK J. MERSON & SON, Farrington, North Petherton, Bridgwater.

**Class 264.—Three Dorset Horn Shearling Ewes, born on or after November 1, 1919.** [4 entries.]

2239 I. (£10.) & R. N. for Champion.<sup>3</sup>—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.  
2240 II. (£5.)—CHARLES MORRIS, Lydeard Farm, Bishop Lydeard.

**Class 265.—Three Dorset Horn Ewe Lambs, born on or after November 1, 1920.**<sup>3</sup> [3 entries.]

2241 I. (£10.)—G. A. & R. A. KINGSWELL, Wellow Farm, Yarmouth, Isle of Wight.  
2243 II. (£5.)—CHARLES MORRIS, Lydeard Farm, Bishop Lydeard.  
2242 III. (£3.)—FRANK J. MERSON & SON, Farrington, North Petherton, Bridgwater.

<sup>1</sup> Prize given by the Dorset Down Sheep Breeders' Association.

<sup>2</sup> Champion Silver Medal given by the Dorset Horn Sheep Breeders' Association for the best exhibit of Dorset Horn Sheep in Classes 262-265.

<sup>3</sup> Prize given by the Dorset Horn Sheep Breeders' Association.

**Ryelands.**

**Class 266.—Ryeland Rams, Two Shear and Upwards.**<sup>1</sup> [10 entries.]

2249 I. (\$10.)—T. L. MARTIN, Ashe Warren House, Basingstoke, for Tidmarsh, born in 1919, bred by C. C. Jacobs, Manor Farm, Tidmarsh, Reading.  
 2251 II. (25.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex, for Ely Dreadnaught 849, born in 1919, bred by C. J. Thomas, Talachddu Farm, Brecon; *a.* Talachddu Admiration 613, *b.* by Royal Shropshire 368.  
 2244 III. (23.)—FRIEND & RENWICK, The Weald, Sevenoaks, for Hurler 860, born in 1918, bred by W. Parkin-Moore, Whitehall, Meolsgate; *a.* Flockmaster 174, *d.* by Clytha Nimbly 169.  
 2247 R. N.—EDWARD JONES, Penybont Farm, Sunnybridge, Brecon, for Clytha Jumbo. C.—2245, 2253.

**Class 267.—Ryeland Shearling Rams.** [17 entries.]

2263 I. (\$10. & C. Champion.)—DAVID J. THOMAS, Talachddu, Brecon, for Talachddu Don.  
 2260 II. (25.)—T. L. MARTIN, Ashe Warren House, Basingstoke, for Ashe Joyful.  
 2265 III. (23.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex, for Ely Surprise.  
 2264 R. N.—JOHN Q. ROWETT, for Ely Standard. H. C.—2264, 2269, 2270. C.—2267, 2268.

**Class 268.—Three Ryeland Ram Lambs.** [12 entries.]

2273 I. (\$10. & R. N. for Champion.)—T. L. MARTIN, Ashe Warren House, Basingstoke.  
 2250 II. (25.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 2275 III. (23.)—C. H. HOBBS, Oldport, Oswestry.  
 2277 R. N.—E. W. LANGFORD, Banksfield, Hereford. H. C.—2273, 2281. C.—2274, 2276.

**Class 269.—Three Ryeland Shearling Ewes.** [8 entries.]

2254 I. (\$10.)—F. T. GOUGH, Lugwardine, Hereford.  
 2268 II. (25.)—FRIEND & RENWICK, The Weald, Sevenoaks.  
 2258 III. (23.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 2256 R. N.—C. H. HOBBS, Oldport, Oswestry. H. C.—2255, 2290.

**Class 270.—Three Ryeland Ewe Lambs.** [12 entries.]

2299 I. (\$10.)—T. L. MARTIN, Ashe Warren House, Basingstoke.  
 2288 II. (25.)—E. W. LANGFORD, Banksfield, Hereford.  
 2283 III. (23.)—F. T. GOUGH, Lugwardine, Hereford.  
 2296 R. N.—C. H. HOBBS, Oldport, Oswestry. H. C.—2292, 2297. C.—2291, 2294, 2302.

**Kerry Hill (Wales).**

**Class 271.—Kerry Hill (Wales) Rams, Two Shear and Upwards.**<sup>2</sup> [9 entries.]

2303 I. (\$10.)—WILLIAM ADDERSON, Gannihelli, Kerry, Mont., for Pentenant Nimrod 5933, born in 1918, bred by W. V. Davies, Pentenant, Churchstoke.  
 2310 II. (25.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for Eaton Knight 6234, born in 1919.  
 2311 III. (23.)—THE DUKK OF WESTMINSTER, G.C.V.O., D.S.O., for Eaton King 6232, born in 1919.  
 2305 R. N.—MAJOR DAVID DAVIES, M.P., Bronstein, Llandinam, Mont., for Mellington Ulster. H. C.—2304. C.—2308.

**Class 272.—Kerry Hill (Wales) Shearling Rams.** [10 entries.]

2313 I. (\$10.)—JOHN ANWYL, Preston Hall Farm, Preston Brockhurst, Shrewsbury, for Brockhurst Champion.  
 2324 II. (25.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for Eaton Loyalist.  
 2319 III. (23.)—CAPTAIN J. M. NAYLOR, Leighton Hall, Welshpool, for Leighton Doctor.  
 2315 R. N.—MAJOR DAVID M. DAVIES, M.P., Bronstein, Llandinam, for Gwernygoe Authentic. H. C.—2314, 2320.

<sup>1</sup> Prizes given by the Ryeland Flock Book Society.

<sup>2</sup> Silver Challenge Cup given through the Ryeland Flock Book Society for the best exhibit of Ryeland Sheep in Classes 266-270.

<sup>3</sup> Prizes given by the Kerry Hill (Wales) Flock Book Society.

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### Class 273.—*Kerry Hill (Wales) Ram Lambs.* [7 entries.]

2381 I. (\$10.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for Eaton Mimi.  
2382 II. (23.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., for Eaton Masterman.  
2329 III. (23.)—ROBERT E. PARKER, Easton, Norwich, for Easton King Onzel.  
2327 R. N.—CAPTAIN J. M. NAYLOR, Leighton Hall, Welshpool, for Leighton Evergood.  
H. C.—2328.

### Class 274.—*Three Kerry Hill (Wales) Shearling Ewes.* [7 entries.]

2387 I. (\$10.)—THE EARL OF POWIS, Powis Castle, Welshpool.  
2334 II. (25.)—CAPTAIN J. M. NAYLOR, Leighton Hall, Welshpool.  
2328 III. (23.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.  
2332 R. N.—MAJOR DAVID DAVIES, M.P., Bronrefriar, Llanddewi, Mon.  
H. C.—2336.

## Lincolns.

### Class 275.—*Lincoln Two Shear Rams.*<sup>1</sup> [2 entries.]

2340 I. (\$10.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber, for Horkstow Manor Magistrate.  
2339 II. (25.)—CLIFFORD NICHOLSON, for Horkstow Manor Goliath.

### Class 276.—*Lincoln Shearling Rams.* [21 entries.]

2356 I. (\$10.) & Champion.—RAUNSWELL & TINNELL, Park House, Louth.  
2345 II. (25.) & R. N. for Champion.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.  
2342 III. (23.)—JOSEPH BROCKLEBANK, Carlton-le-Moorland, Newark.  
2353 R. N.—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.  
H. C.—2359. C.—2360, 2361.

### Class 277.—*Five Lincoln Shearling Rams.*<sup>2</sup> [14 entries.]

2364 I. (\$15.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.  
2362 II. (\$10.)—JOSEPH BROCKLEBANK, Carlton-le-Moorland, Newark.  
2369 III. (25.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.  
2367 IV. (22.)—CHARLES E. HOWARD, Nocton Rise, Lincoln.  
2374 R. N.—W. H. WATSON, Temple Bruer, Lincoln.  
H. C.—2368.

### Class 278.—*Three Lincoln Ram Lambs.* [9 entries.]

2375 I. (\$10.) & 2377 III. (23.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.  
2382 II. (25.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber, Lincs.  
2376 R. N.—THOMAS CAMPION, East Heslerton, York.  
C.—2384.

### Class 279.—*Three Lincoln Shearling Ewes.* [9 entries.]

2398 I. (\$10.)—CHARLES E. HOWARD, Nocton Rise, Lincoln.  
2386 II. (25.) & 2356 R. N.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.  
2389 III. (23.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.

### Class 280.—*Three Lincoln Ewe Lambs.* [8 entries.]

2392 I. (\$10.) & 2393 III. (23.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.  
2396 II. (25.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.  
2395 R. N.—E. D. NEWMAN, Scramby Manor, Spilsby.

## Leicesters.<sup>4</sup>

### Class 281.—*Leicester Shearling Rams.* [14 entries.]

2407 I. (\$10.) & Champion.—THE EXSRS. OF THE LATE ERNEST F. JORDAN, Eastburn, Driffield.  
2404 II. (25.) & R. N. for Champion.—GEORGE HARRISON, Gainford Hall, Darlington.  
2409 III. (23.)—ROBERT MCGINNISON, Garton Field, Driffield.  
2411 R. N.—C. H. SIMPSON & SONS, Castle House, Hunmanby, Yorks.  
H. C.—2399, 2400, 2401, 2402, 2403, 2405, 2406, 2408, 2410, 2412.

### Class 282.—*Leicester Ram Lambs.* [7 entries.]

2417 I. (\$10.) & 2418 II. (25.)—GEORGE HARRISON, Gainford Hall, Darlington.  
2414 III. (23.) & 2415 R. N.—W. M. CURZON-HERKIRK, Beau Manor Park, Loughborough.  
H. C.—2416. C.—2418.

<sup>1</sup> Prizes given by the Lincoln Long-Wool Sheep Breeders' Association.

<sup>2</sup> Champion Prize of £5 given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 275 and 276.

<sup>3</sup> Prizes given by the Lincoln Long-Wool Sheep Breeders' Association.

<sup>4</sup> £27 towards these Prizes were given by the Leicester Sheep Breeders' Association.

<sup>4</sup> Champion Silver Medal given by the Leicester Sheep Breeders' Association for the best exhibit of Leicester Sheep in Classes 281-284.

**Class 283.—Leicester Shearing Ewes.** [10 entries.]

2423 I. (210), & 2424 R. N.—THE EXRS. OF THE LATE ERNEST F. JORDAN, Eastburn, Duffield.  
 2421 II. (25).—GEORGE HARRISON, Gainsford Hall, Darlington.  
 2427 III. (23).—ROBERT MERRINSON, Garton Field, Duffield.  
 H. C.—2420, 2422, 2423, 2426, 2428, 2429.

**Class 284.—Three Leicester Ewe Lambs.** [7 entries.]

2434 I. (210), & 2435 III. (23).—GEORGE HARRISON, Gainsford Hall, Darlington.  
 2430 II. (25).—MAJOR CLIVE BEHRENS, Swinton Grange, Malton.  
 2431 R. N.—W. M. CUTZON-HERRICK, Beau Manor Park, Loughborough.  
 H. C.—2432, 2433.

**Border Leicesters.**

**Class 285.—Border Leicester Rams, Two Sheared Upwards.** [4 entries.]

2439 I. (210), & 2440 II. (23).—WILLIAM R. ROSS, Milton of Culloden, Inverness, for War Model, born in 1918.  
 2440 II. (25).—ISAAC SLACK, High Crosby, Crosby-on-Eden, Carlisle, for Duke of Dron, 5101, born in 1918, bred by W. R. Ross, Milton of Culloden.

**Class 286.—Border Leicester Shearing Rams.** [8 entries.]

2446 I. (210), & 2447 III. (23).—ANDREW M. MONTGOMERY, Netherhall, Castle Douglas.  
 2449 II. (25).—WILLIAM R. ROSS, Milton of Culloden, Inverness.  
 2444 R. N.—W. J. GLAHOME, Little Houghton, Lesbury.

**Class 287.—Border Leicester Ewes, Two Shear and Upwards (with their lambs at foot).<sup>2</sup>** [3 entries.]

2461 I. (210).—WILLIAM R. ROSS, Milton of Culloden, Inverness, for ewe, born in 1918.

**Class 288.—Border Leicester Shearing Ewes.** [6 entries.]

2456 I. (210), & R. N. for Champion. —WILLIAM R. ROSS, Milton of Culloden, Inverness.  
 2454 II. (25), & 2455 III. (23).—W. J. GLAHOME, Little Houghton, Lesbury.  
 2457 R. N.—ISAAC SLACK, High Crosby, Crosby-on-Eden, Carlisle.

**Wensleydales.**

**Class 289.—Wensleydale Rams, Two Shear and Upwards.** [3 entries.]

2459 I. (210).—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Cock of the Walk, born in 1919, bred by William Milner, Slyne Hall, Lancaster.  
 2460 II. (25).—T. E. CLARKE, Challan Hall, Silverdale, Lancashire, for Challan Cld, born in 1919, bred by M. Burton, Sutton, Thirsk.  
 2458 III. (23).—JOHN ALLISON, Howgrave Hall, Kirklington, Bedale, for Howgrave Royal 2606, born in 1918, bred by M. Burton, Sutton, Thirsk.

**Class 290.—Wensleydale Shearing Rams.** [7 entries.]

2462 I. (210).—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Bedale Blue, bred by F. Foster, Clapham Lodge, Bedale.  
 2466 II. (25).—JOHN A. WILLIS, Manor House, Carperby, Yorks.  
 2464 III. (23).—JOHN WILLIAM GREENST, Holme-on-Swale, Thirsk, for ram, bred by E. A. Greenst, Holme-on-Swale.  
 2461 R. N.—JOHN ALLISON, Howgrave Hall, Kirklington, Bedale.  
 H. C.—2467. O.—2465.

**Class 291.—Three Wensleydale Shearing Rams.** [4 entries.]

2471 I. (210).—JOHN A. WILLIS, Manor House, Carperby, Yorks.  
 2469 II. (25).—JOHN HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.  
 2470 III. (23).—JOHN WILLIAM GREENST, Holme-on-Swale, Thirsk, for ram, bred by Thomas Burton, Crosshaw, Penrith.  
 2468 R. N.—JOHN ALLISON, Howgrave Hall, Kirklington, Bedale.

**Class 292.—Three Wensleydale Shearing Ewes.** [6 entries.]

2473 I. (210), & 2474 R. N.—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.  
 2477 II. (25).—JOHN A. WILLIS, Manor House, Carperby, Yorks.  
 2475 III. (23).—JOHN WILLIAM GREENST, Holme-on-Swale, Thirsk.

<sup>1</sup> Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 285-288. A Gold Medal will be given by the Society of Border Leicester Sheep Breeders to the winner of the Challenge Cup.

<sup>2</sup> Prizes given by the Society of Border Leicester Sheep Breeders.

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**Class 293.**—*Wensleydale Yearling Ewes, shorn in Wool.*<sup>1</sup> [6 entries.]  
 2484 I. (£10.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.  
 2483 II. (£5.) & 2492 III. (£3.)—JOHN A. WILLIS, Mano House, Carperby, Yorks.  
 2481 R. N.—JOHN WILLIAM GREENSTY, Holme-on-Swale, Thirsk.  
 H. C.—2490.

**Lonks.**

**Class 294.**—*Lonk Rams, Shearing and Upwards.* [3 entries.]  
 2484 I. (£10.)—WILLIAM BENYON, Brooks Farm, Moorside, Ilkley, for Ling Bob, born in 1910.  
 2486 II. (£5.)—EDWARD SMITH, Summerhouse Farm, Cowling, Keighley, for Summerhouse  
 Sheep 2nd.  
 2485 R. N.—EDWARD SMITH, for General Foch.

**Class 295.**—*Lonk Ram Lamb.*<sup>2</sup> [2 entries.]  
 2487 I. (£10.)—EDWARD SMITH, Summerhouse Farm, Cowling, Keighley.  
 2488 II. (£5.)—EDWARD SMITH, for ram, bred by G. Hall, Mount Pleasant, Oxenhope.

**Class 296.**—*Three Lonk Shearing Ewes.* [2 entries.]  
 2489 I. (£10.)—EDWARD SMITH, Summerhouse Farm, Cowling, Keighley.  
 2490 II. (£5.)—EDWARD SMITH, for ewes, bred by R. Crabtree, Hoy Fold Farm, Foulridge,  
 Lancs.

**Derbyshire Gritstones.**

**Class 297.**—*Derbyshire Gritstone Rams, Shearing and Upwards.* [2 entries.]  
 2492 I. (£10.)—W. A. TRUHAN, Rydale, Frodsham, for Goyt Dale Wilson, born in 1919.  
 2491 II. (£5.)—CONVERS HENRY BOWMAN, Harewood Grange, Holymoorside, Chesterfield,  
 for ram, born in 1915, bred by R. Stewart, Garstang.

**Class 298.**—*Three Derbyshire Gritstone Shearing Ewes.* [2 entries.]  
 2493 I. (£10.) & 2494 II. (£5.)—CORNELIUS HENRY BOWMAN, Harewood Grange, Holymoorside,  
 Chesterfield.

**Kent or Romney Marsh.**

**Class 299.**—*Kent or Romney Marsh Two Shear Rams.* [12 entries.]  
 2496 I. (£10. & Champion<sup>3</sup>), & 2495 II. (£5.)—L. H. & G. W. FINN, Westwood Court, Faversham, Kent.  
 2504 III. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.  
 2501 R. N.—S. W. MILLEN, Copton Manor, Faversham.  
 H. C.—2492.      C.—2497, 2498.

**Class 300.**—*Kent or Romney Marsh Shearling Rams.*<sup>4</sup> [32 entries.]  
 2531 I. (£15. & R. N. for Champion<sup>3</sup>), & 2529 R. N.—J. EGERTON QUESTED, The Firs, Cheriton, Kent.  
 2518 II. (£10.)—L. H. & G. W. FINN, Westwood Court, Faversham.  
 2535 III. (£5.)—C. F. WOOD, Teynham Court, Sittingbourne.  
 2521 IV. (£3.)—THE HADLOW FLOUR CO., Somerhill Estate Office, Tonbridge.  
 H. C.—2530.      C.—2515, 2522, 2526, 2528.

**Class 301.**—*Five Kent or Romney Marsh Shearling Rams.*<sup>4</sup> [13 entries.]  
 2548 I. (£20.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.  
 2541 II. (£14.)—L. H. & G. W. FINN, Westwood Court, Faversham.  
 2550 III. (£10.)—C. F. WOOD, Teynham Court, Sittingbourne.  
 2546 IV. (£5.)—S. W. MILLEN, Copton Manor, Faversham.  
 2540 R. N.—J. HAYNER BETTS, Greenhill Farm, Otham, Maidstone.  
 H. C.—2547.      C.—2543, 2544.

**Class 302.**—*Three Kent or Romney Marsh Ram Lambs.* [14 entries.]  
 2555 I. (£10.)—L. H. & G. W. FINN, Westwood Court, Faversham, Kent.  
 2552 II. (£5.)—H. B. AMOS, Ripton, Ashford, Kent.  
 2559 III. (£3.)—THE HADLOW FLOUR COMPANY, Somerhill Estate Office, Tonbridge.  
 2564 R. N.—J. EGERTON QUESTED, The Firs, Cheriton, Kent.  
 H. C.—2565.      C.—2537, 2563.

<sup>1</sup> Prizes given by the Wensleydale Longwool Sheep Breeders' Association.

<sup>2</sup> Prizes given by the Lonk Sheep Breeders' Association.

<sup>3</sup> Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 299 and 300.

<sup>4</sup> Prizes given by the Kent or Romney Marsh Sheep Breeders' Association.

**Class 303.—Three Kent or Romney Marsh Shearling Ewes.** [11 entries.]

2571 I. (£10, & Champion) — S. W. MILLER, Copton Manor, Faversham.  
 2547 II. (£5.) — J. H. & G. W. FINN, Westwood Court, Faversham.  
 2573 III. (£3.) — J. EGERTON QUESTER, The Firs, Chertsey, Kent.  
 2578 R. N.—ASHLEY STEVENS, Luddenham Court, Faversham.  
 H. C.—2569. C.—2566, 2568.

**Class 304.—Three Kent or Romney Marsh Ewe Lambs.** [13 entries.]

2568 I. (£10, & R. N. for Champion) — S. W. MILLER, Copton Manor, Faversham.  
 2585 II. (£5.) — J. EGERTON QUESTER, The Firs, Chertsey, Kent.  
 2581 III. (£3.) — J. EGERTON QUESTER, The Firs, Chertsey, Kent.  
 H. C.—2584. C.—2582, 2587.  
 Cup I.—J. H. & G. W. FINN, Westwood Court, Faversham.  
 Cup I.—R. N. for Cup.—S. W. MILLER, Copton Manor, Faversham.

**Cotswolds.**

**Class 305.—Cotswold Shearling Rams.\*** [10 entries.]

2594 I. (£10.) — WILLIAM GARNE, Abingdon, Fairford, Glos.  
 2596 II. (£5.) — WILLIAM HOUTON, Broadfield Farm, Northleach, Glos.  
 2592 III. (£3.) — LT-COL. R. P. BRASSEY, Manor Farm, Upper Slaughter, Glos.  
 2598 R. N.—F. W. P. MATTHEWS, Manor Farm, Fifield, Oxford.  
 H. C.—2590. C.—2582, 2587.

**Class 306.—Three Cotswold Ram Lambs.** [7 entries.]

2604 I. (£10.) & 2605 II. (£5.) — WILLIAM GARNE, Abingdon, Fairford, Glos.  
 2603 R. N.—THOMAS BROWN & SON, Marham Hall, Downham, Norfolk.  
 H. C.—2601, 2606. C.—2600, 2602.

**Class 307.—Three Cotswold Shearling Ewes.** [4 entries.]

2607 I. (£10.) & 2608 II. (£5.) — WILLIAM GARNE, Abingdon, Fairford, Glos.  
 2609 R. N.—WILLIAM HOUTON, Broadfield Farm, Northleach, Glos.  
 H. C.—2610.

**Class 308.—Three Cotswold Ewe Lambs.** [6 entries.]

2615 I. (£10.) & 2614 II. (£5.) — WILLIAM GARNE, Abingdon, Fairford, Glos.  
 2612 R. N.—LT-COL. E. P. BRASSEY, Manor Farm, Upper Slaughter, Glos.  
 H. C.—2613. C.—2611, 2616.

**Devon Long-Wools.**

**Class 309.—Devon Long-Wool Shearling Rams.** [4 entries.]

2619 I. (£10.) & 2620 II. (£5.) — FREDERICK WHITE, Torweston, Williton, Somerset.  
 2618 R. N.—W. G. BRENT, Warrens Park, Coade Green, Launceston.

**Class 310.—Three Devon Long-Wool Shearling Ewes.** [2 entries.]

2621 I. (£10.) & 2622 II. (£5.) — FREDERICK WHITE, Torweston, Williton, Somerset.

**South Devons.**

**Class 311.—South Devon Two Shear Rams.\*** [2 entries.]

2623 I. (£10.) — J. R. HALLITT, Sherford Barton, Brixton, Plymouth, for ram, bred by H. Body, Twovelwoods, Liskeard.

**Class 312.—South Devon Shearling Rams.** [5 entries.]

2626 I. (£10.) — J. R. HALLITT, Sherford Barton, Brixton, Plymouth.  
 2627 II. (£5.) — WILLIAM HAWKE, JUN., Trebudannon, St. Columb, Cornwall.

**Class 313.—Three South Devon Shearling Ewes.** [3 entries.]

2630 I. (£10.) — WILLIAM HAWKE, JUN., Trebudannon, St. Columb, Cornwall.  
 2631 II. (£5.) — BENJAMIN J. HOOPHILL, Folly, Kingsbridge.

**Class 314.—Three South Devon Ewe Lambs.\*** [4 entries.]

2634 I. (£10.) — WILLIAM HAWKE, JUN., Trebudannon, St. Columb, Cornwall.  
 2633 II. (£5.) — J. R. HALLITT, Sherford Barton, Brixton, Plymouth.

\* Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Pen of Ewes or Ewe Lambs in Classes 303 and 304.

\* Silver Challenge Cup, value Forty Guineas, given through the Kent or Romney Marsh Sheep Breeders' Association for the best group of Sheep, bred by Exhibitor, consisting of Two Headram, Shearling Ram, Pen of Three Ram Lambs, Pen of Three Shearling Ewes and Pen of Three Ewe Lambs, in Classes 299, 300, 302, 303 and 304.

\* Prizes given by the Cotswold Sheep Society.

\* Prizes given by the South Devon Flock Book Association.

**Dartmoors.**

**Class 315.—Dartmoor Rams, Two Shear and Upwards.**<sup>1</sup> [2 entries.]  
 2637 I. (£10.)—JOHN H. GLOVER, Coruwood, Devon, for Cleave Triumph 191, born in 1919, bred by W. A. Johns & Sons, Cleave, Lifton.  
 2638 II. (£5.)—HENRY J. KINGWELL, Bow Grange, Totnes, Devon, for ram, born in 1919, bred by J. E. Dawe, Week, Tavistock.

**Class 316.—Dartmoor Shearling Rams.** [5 entries.]

2643 I. (£10.)—RICHARD P. LUKE, Lower Chaddlehanger, Tavistock.  
 2641 II. (£5.)—W. A. JOHNS & SONS, Cleave, Kelly, Lifton, Devon.  
 2642 R. N.—HENRY J. KINGWELL, Bow Grange, Totnes, for ram, bred by John R. T. Kingwell & Sons, Great Aish.

**Class 317.—Three Dartmoor Shearling Ewes.** [2 entries.]

2645 I. (£10.)—HENRY J. KINGWELL, Bow Grange, Totnes, for ewes, bred by John R. T. Kingwell & Sons, Great Aish.

**Exmoor Horn.**

**Class 318.—Exmoor Horn Rams, Two Shear and Upwards.**<sup>2</sup> [1 entry.]  
 2646 I. (£10.)—J. HARRIS, Wistland, Pound, Kentisbury, Barnstaple, for ram born in 1917, bred by J. & O. Bobbins, Lydecott Hall, High-Bray.

**Class 319.—Exmoor Horn Shearling Rams.** [1 entry.]

2647 I. (£10.)—J. HARRIS, Wistland, Pound, Kentisbury, Barnstaple.

**Class 320.—Three Exmoor Horn Shearling Ewes.** [1 entry.]

2648 I. (£10.)—J. HARRIS, Wistland, Pound, Kentisbury, Barnstaple.

**Cheviots.**

**Class 321.—Cheviot Rams, Two Shear and Upwards.**<sup>3</sup> [2 entries.]  
 2649 I. (£10.)—JOHN ROBSON, Newton, Bellingham, for Wannles, born in 1919.  
 2650 II. (£5.)—JOHN ROBSON, Lynegar, Watten, Caithness, for Nimrod, born in 1919, bred by John Robson, Newton, Bellingham.

**Class 322.—Cheviot Shearling Rams.** [2 entries.]

2651 I. (£10.) & 2652 II. (£5.)—JOHN ROBSON, Newton, Bellingham.

**Class 323.—Cheviot Shearling Ewes.** [2 entries.]

2654 I. (£10.) & 2653 II. (£5.)—JOHN ROBSON, Newton, Bellingham.

**Herdwicks.**

**Class 324.—Herdwick Rams, Two Shear and Upwards.**<sup>4</sup> [1 entry.]  
 2655 I. (£10.)—LORD LECONFIELD, Cockermouth Castle, Cumberland, for ram, born in 1917, bred by John James, Boners, Calbeck.

**Class 325.—Herdwick Shearling Rams.** [1 entry.]

2656 I. (£10.)—LORD LECONFIELD, Cockermouth Castle, Cumberland, for ram, bred by John Towers, New Park, Ireby.

**Class 326.—Three Herdwick Shearling Ewes.** [1 entry.]

2657 I. (£10.)—LORD LECONFIELD, Cockermouth Castle, Cumberland.

**Welsh Mountain.**

**Class 327.—Welsh Mountain Rams, Shearling and Upwards.** [10 entries.]  
 2662 I. (£10.)—MAJOR E. J. W. PLATT, Gorddington, Llanfairfechan, for ram, born in 1919.  
 2663 II. (£5.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor, for Snowdon 10, born in 1919.  
 2659 R. N.—THE HON. E. L. MOSTYN, The Wern Farm, Whitford, for Wern Hopeful  
 H. C.—2660, 2664, 2666.

**Class 328.—Three Welsh Mountain Shearling Ewes.** [4 entries.]

2671 I. (£10.) & 2870 R. N.—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor.

2669 II. (£5.)—MAJOR E. J. W. PLATT, Gorddington, Llanfairfechan.  
 H. C.—2668.

<sup>1</sup> Prizes given by the Dartmoor Sheep Breeders' Association.

<sup>2</sup> Prizes given by the Exmoor Horn Sheep Breeders' Society.

<sup>3</sup> Prizes given by Breeders of Cheviot Sheep.

<sup>4</sup> Prizes given by the Herdwick Sheep Breeders' Association.

### **Black Welsh Mountain.**

#### **Class 329.—Black Welsh Mountain Rams, Two Shear and Upwards.<sup>1</sup>** [2 entries.]

2672 I. (10.)—LT. COL. P. L. CLOWES, C.B., Burton Court, Leominster, for ram, bred by R. M. Greaves, Wern, Portmadoc.  
2673 II. (15.)—MRS. JEVROISE, Herrard Park, Basingstoke, for ram, bred by R. M. Greaves, Wern, Portmadoc.  
**Class 331.—Three Shearling Black Welsh Mountain Ewes.** [3 entries.]  
2676 I. (10.) & 2675 II. (15.)—MRS. JEVROISE, Herrard Park, Basingstoke.  
2674 R. M.—LT. COL. P. L. CLOWES, C.B., Burton Court, Leominster.

### **Black-Faced Mountain.<sup>2</sup>**

#### **Class 332.—Black-Faced Mountain Rams, Two Shear and Upwards.** [5 entries.]

2680 I. (10.)—GEOFFREY ROBSON, Closeshill, Bellingham, for *Carry On*, born 1919, bred by M. G. Hamilton, Woodsford, Cobbinshaw; \* *Hoddast*.  
2678 II. (15.)—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, Co. Durham, for *Black Knight*, born in 1919, bred by H. Anderson, Over Whitehaugh.  
2677 III. (23.)—OCTAVIUS MONKHOUSE for *Big Face*, born in 1919.

#### **Class 333.—Black-Faced Mountain Shearling Rams.** [6 entries.]

2682 I. (10.)—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, Co. Durham, for *Sunshine*.  
2686 II. (15.)—JOHN ROBSON, Newtown, Bellingham.  
2683 III. (23.)—OCTAVIUS MONKHOUSE, for ram, bred by Mr. Anderson, Blackside.

#### **Class 334.—Black-Faced Mountain Shearling Ewes.** [6 entries.]

2689 I. (10.)—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, Co. Durham, for *Queen of the Bent*.  
2692 II. (15.)—GEOFFREY ROBSON, Closeshill, Bellingham.  
2690 III. (23.)—OCTAVIUS MONKHOUSE, for *Weardale's Pride*.

### **Swaledale Dales Bred.**

#### **Class 335.—Swaledale Dales Bred Rams, born previous to 1919.<sup>3</sup>** [3 entries.]

2695 I. (10.)—JOHN LAWRENCE PEACOCK, Puncard House, Arkengarthdale, Richmond, Yorks, for ram, born in 1917, bred by John Dent, Hartley Castle, Kirkby Stephen.  
2696 II. (10.)—JOHN SMITH, Slack Farm, Linedale, Middleton-in-Teesdale, for ram, born in 1919, bred by T. Sowberry, Linedale Head, Middleton-in-Teesdale.  
2694 R. N.—JOHN LAWRENCE PEACOCK.

#### **Class 336.—Swaledale Dales Bred Rams, born in 1919.** [3 entries.]

2698 I. (10.)—JAMES PEACOCK, Spanham House, Barningham, Barnard Castle, for *What's Wanted*.  
2699 II. (25.)—JOHN LAWRENCE PEACOCK, Puncard House, Arkengarthdale, Richmond, Yorks.  
2697 R. N.—THOMAS ADDISON, Boves, Darlington, for *Deepdale Hero*.

#### **Class 337.—Swaledale Dales Bred Rams, born in 1920.<sup>3</sup>** [7 entries.]

2702 I. (10.)—THOMAS W. GUY, Gilmonby, Bows, Darlington, for ram, bred by Jonathan Addisons, Holwick, Middleton-in-Teesdale.  
2705 II. (25.)—JOHN LAWRENCE PEACOCK, Puncard House, Arkengarthdale, Richmond, Yorks.  
2706 R. N.—JOHN SMITH, Slack Farm, Linedale, Middleton-in-Teesdale.

#### **Class 338.—Three Swaledale Dales Bred Ewes, of any age.** [2 entries.]

2708 I. (10.)—JAMES PEACOCK, Spanham House, Barningham, Barnard Castle, for ewes, born in 1919.  
2707 II. (15.)—JOSEPH WILLIAM DENT, Fair View, Middleton-in-Teesdale, for ewes, born in 1918.

#### **Class 339.—Three Swaledale Dales Bred Gimmer Hogs, born in 1920.<sup>3</sup>** [3 entries.]

2710 I. (10.)—JAMES PEACOCK, Spanham House, Barningham, Barnard Castle.  
2711 II. (25.)—JOHN LAWRENCE PEACOCK, Puncard House, Arkengarthdale, Richmond, Yorks.  
2709 R. N.—JOSEPH WILLIAM DENT, Fair View, Middleton-in-Teesdale.

<sup>1</sup> Prizes given by the Black Welsh Mountain Sheep Breeders' Association.

<sup>2</sup> £24 towards these Prizes were given by the English Black-face Sheep Society.

<sup>3</sup> Prizes given by the Swaledale Dales Bred Sheep Breeders' Association.

## PIGS.

## Large Whites.

Class 340.—*Large White Boars, farrowed in or before 1919.* [19 entries.]

2719 I. (#10, Champion,<sup>1</sup> & R. N. for Cup,<sup>2</sup>)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Worsley Jay 351a 20419, born Jan. 26, 1915; *s.* Jay of Worsley 12th 16143, *d.* Worsley Lady 16th 30620 by Worsley Emperor 38th 15479.  
 2719 II. (#15)—JOHN FILLINGHAM, The George Hotel, Grantham, for Progress of Grantham 24897, born Jan. 7, 1918, bred by Edmund Wherry, Bourne, Lincoln; *s.* Emperor of Pinchbeck 21077, *d.* Queen Anne of Pinchbeck 47348 by That's 'Im of Worsley 1st 19095.  
 2721 III. (#3)—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, Staffs, for Banner of Caldmore 25879, born Jan. 7, 1919, bred by A. W. White, Spalding, Lincoln; *s.* Banner of Spalding 21087, *d.* Perfection of Spalding 50206 by Jay of Wyboston 16149.  
 2712 R. N.—BOXTED COLONY FOR EX-SERVICE MEN, The Priory Farm, Boxted, Colchester, for Turk of Bottesford.  
 H. C.—2714, 2716, 2718, 2720, 2720.      C.—2722.

Class 341.—*Large White Boars, farrowed in 1920, before July 1.<sup>3</sup>* [9 entries.]

2737 I. (#10, & R. N. for Champion,<sup>1</sup>)—FRANK W. HICKTON, Delbroughton, nr. Stourbridge, for Brookfield Lion Heart 29013, born Jan. 2; *s.* Lion Heart of Caldmore 20929, *d.* Stourbridge 60004 by Bonnie Bourne 22026.  
 2733 II. (#5)—THE EARL OF EELMSERE, Worsley Hall, nr. Manchester, for Stetchworth Kitchen 4th 30507, born Jan. 1; *s.* Stetchworth Kitchener 2nd 24597, *d.* Stetchworth Empress 25th 70078 by Bourne of Stetchworth 22169.  
 2734 III. (#3)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Bottesford Turk 24th 23573, born Jan. 3, bred by D. R. Daybell, Bottesford, Nottingham; *s.* Worsley Turk 6th 22571, *d.* Bottesford Buttercup 11th 49012 by Ringleader of Bottesford 2nd 17823.  
 2786 R. N.—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Cooeham, Horsham, for Shipton King.  
 H. C.—2731, 2732.      C.—2735, 2739.

Class 342.—*Large White Boars, farrowed in 1920, on or after July 1.<sup>3</sup>* [14 entries.]

2747 L. (#10)—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Cooeham, Horsham, for Shipton Prince 30401, born July 14; *s.* Turk of Tendring 22349, *d.* Bottesford Buttercup 15th 52654 by Worsley Turk 95th 22971.  
 2742 II. (#5)—THE DOWAGER LADY BURTON, Rangemore, Burton-on-Trent, for Delvesgreen Rangemore, born July 2, bred by R. P. Haynes, Delves Green Farm, Wednesbury; *s.* Lion Heart of Caldmore 20929, *d.* Caldmore Bashful Lady 11th 52878 by Stetchworth Turk 4th 21345.  
 2741 III. (#3)—BOXTED COLONY FOR EX-SERVICE MEN, The Priory Farm, Boxted, Colchester, for Boxted Prince, born July 22, bred by Essex County Council, Boxted; *s.* Turk of Bottesford 27417, *d.* Queen of Boxted 00884 by Kitchener of Caldmore 22353.  
 2740 R. N.—BOXTED COLONY FOR EX-SERVICE MEN, for Boxted Jeweller.  
 H. C.—2745.      C.—2745, 2751.

Class 343.—*Large White Boars, farrowed in 1921.* [29 entries.]

2759 I. (#10)—DANIEL R. DAYBELL, Bottesford, Nottingham, for boar, born Jan. 3; *s.* Worsley Jay 87th 27619, *d.* Bottesford Empress 11th 43750 by Ringleader of Bottesford 2nd 17623.  
 2778 II. (#5)—EDMUND WHERRY, Bourne, Lincolnshire, for Bourne Bar-Nona 162nd, born Jan. 10; *s.* Bourne Bar-Nona 83rd 23549, *d.* Bourne Buttercup 39th 49123 by Bourne Bandmaster 18397.  
 2757 III. (#3)—DANIEL R. DAYBELL, for boar, born Jan. 5; *s.* Worsley Jay 87th 27619, *d.* Bottesford Buttercup 11th 49012 by Ringleader of Bottesford 2nd 17623.  
 2780 R. N.—ALFRED W. WHITE, Hillegom, Spalding, for Spalding Signal.  
 H. C.—2755, 2760, 2764, 2779.      C.—2756, 2773, 2774.

<sup>1</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Large White Boar in Classes 340-343.

<sup>2</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Large White Pig in Classes 340-346.

<sup>3</sup> Prizes given by the National Pig Breeders' Association.

Class 344.—*Large White Breeding Sows, farrowed in or before 1919.* [15 entries.]

2797 I. (£10, Champion<sup>1</sup> & Cup<sup>2</sup>)—EDMUND WHERRY, Bourne, Lines, for Bourne Queen Anne 5377, born Jan. 7, 1918, farrowed March 17, 1921; <sup>3</sup> Emperor of Blenbeck 21077, <sup>4</sup> Queen Anne of Pinchbeck 47548 by That's 1m of Worsley 1st 19093.  
 2785 II. (£5.)—THE EARL OF ELLISMORE, Worsley Hall, nr. Manchester, for Queen of Stetchworth II 4th 61016, born Jan. 1, 1918, farrowed Jan. 1, 1921, bred by E. THOMLINSON, East House Farm, Tockwith, York; <sup>5</sup> Bourne Bandmaster 18397, <sup>6</sup> Fragrance of West Derby 46094 by Turk of Worsley 10th 17775.  
 2788 III. (£3.)—SIR GILBERT GREENALL, Bt., C.V.O., Walton Hall, Warrington, for Primrose of Tending A 60942, born July 13, 1918, farrowed March 27, 1921, bred by J. I. Major, The Whyle House, Ramsey, Hunts.; <sup>7</sup> Good Boy 21111, <sup>8</sup> Ramsey Primrose 27th 47562 by Wonder of Ramsey 19235.  
 2783 R. N.—CHIVERS & SONS, LTD., Histon, Cambridge, for Histon Bertha 2nd.  
 H. C.—2790, 2794. C.—2793.

Class 345.—*Large White Sows, farrowed in 1920, before July 1.* [18 entries.]

2803 I. (£10, & R. N. for Champion<sup>1</sup>)—THE EARL OF ELLISMORE, Worsley Hall, nr. Manchester, for Matchless of Stetchworth 68548, born Jan. 8, bred by A. W. White, Hillegom, Spalding; <sup>2</sup> Spalding Wonder 6th 24221, <sup>3</sup> Spalding Matchless 3rd 55132 by Banner of Spalding 21087.  
 2802 II. (£5.)—THE EARL OF ELLISMORE, for Mary of Stetchworth 68540, born Jan. 10, bred by A. W. White, Hillegom, Spalding; <sup>4</sup> Banner of Spalding 21087, <sup>5</sup> Spalding Queen Mary 2nd 50502 by Turk of Rayton 16393.  
 2808 III. (£3.)—HOWLAND P. HAYNES, Delvers Green Farm, Wednesbury, Staffs, for Caldmore Bashful Lady 15th, born Jan. 2, 1920; <sup>6</sup> Caldwell Kitchener 5th 26173, <sup>7</sup> Caldmore Bashful Lady 11th 52878 by Stetchworth Turk 4th 21345.  
 2798 R. N.—ERNEST A. BENTLEY, Clay Leaches Farm, Ridghill, Stalybridge, for Ridghill Queen 2nd.  
 H. C.—2799, 2801, 2804, 2807, 2811, 2813, 2815. C.—2805, 2810, 2814.

Class 346.—*Large White Sows, farrowed in 1920, on or after July 1.*<sup>8</sup> [22 entries.]

2818 I. (£10.)—BOXED COLONY FOR EX-SERVICE MEN, The Priory Farm, Colchester, for Boxed Jewel, born July 26, bred by Essex County Council, Boxted, Colchester; <sup>9</sup> Turk of Botesford 27471, <sup>10</sup> d. Jewel of Boxted 60002 by Bonnie Bourne 22029.  
 2834 II. (£5.)—EDMUND WHERRY, Bourne, Lincolnshire, for Bourne Beauty 8th, born July 5; <sup>11</sup> <sup>12</sup> Bourne King John 28091, <sup>13</sup> d. Bourne Beauty 2nd 58128 by Bourne Big Ben 22107.  
 2836 III. (£3.)—W. W. WHITE & SONS, Pool Farm, Tatton, for Tatton Amy 1st, born July 2; <sup>14</sup> <sup>15</sup> Hiscox 24101, born July 6th 59812 by Hiscox Lion Heart 22431.  
 2817 R. N.—BOXED COLONY FOR EX-SERVICE MEN, for Boxed Jewel 3rd.  
 H. C.—2818, 2819, 2821, 2825, 2830, 2835, 2837. C.—2822.

Class 347.—*Three Large White Sows, farrowed in 1921.* [10 entries.]

2847 I. (£10.)—EDMUND WHERRY, Bourne, Lines, for sows, born Jan. 7; <sup>16</sup> Bourne Baron 33rd 23549, <sup>17</sup> d. Bourne Buttercup 2nd 48314 by Bourne Banger 2nd 17111.  
 2839 II. (£5.)—DANIEL R. DAYKEL, Botesford, Nottingham, for sows, born Jan. 3; <sup>18</sup> Worsley Jay 87th 27619, <sup>19</sup> d. Botesford Empress 11th 43750 by Ringleader of Botesford 2nd 17632.  
 2842 III. (£3.)—SIR GILBERT GREENALL, Bt., C.V.O., Walton Hall, Warrington, for sows born Jan. 2; <sup>20</sup> Sapperton Boy 24471, <sup>21</sup> d. Worsley Queen 86th 55912 by Worsley Emperor 74th 21569.  
 2846 R. N.—E. THOMLINSON, East House Farm, Tockwith, York.  
 H. C.—2838.

## Middle Whites.

Class 348.—*Middle White Boars, farrowed in or before 1919.* [11 entries.]

2849 I. (£10, & Champion<sup>1</sup>)—JOHN CHIVERS, Estate Office, Histon, Cambridge, for Histon Woodman 28099, born Jan. 3, 1919; <sup>2</sup> Sundon Shrewsbury 23243, <sup>3</sup> d. Lady Woodlands 60880 by Sundon Scott 20599.  
 2852 II. (£5.)—W. B. HILL, Fairview Farm, Prestwood Road, Wolverhampton, for Prestwood Royalist 32217, born Jan. 1, 1919; <sup>4</sup> Prestwood Acrobat 1st 23197, <sup>5</sup> d. Prestwood Rosadore 1st 45806 by Prestwood Bugler 14451.  
 2851 III. (£3.)—ALBERT LAIRD, The Manor, Sundon, Dunstable, for Sundon Rambler 32469, born July 2, 1918; <sup>6</sup> Sundon M.C.C. 21789, <sup>7</sup> d. Sundon Fascinating Combie 43224 by Sundon Conqueror 16799.  
 2855 R. N.—LEOPOLD C. FAIR, Middlethorpe Hall, York, for Wharfedale Marvel.  
 H. C.—2853. C.—2850.

<sup>1</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Large White Sow in Classes 344-346.

<sup>2</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Large White Pig in Classes 340-346.

<sup>3</sup> Prizes given by the National Pig Breeders' Association.

<sup>4</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Middle White Boar in Classes 344-351.

**Class 349.—Middle White Boar, farrowed in 1920, before July 1.<sup>1</sup> [10 entries.]**

2866 I. (£10, & R. N. for Champion.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Deliverance 32575, born Jan. 3; s. Wharfedale Lifeboat 28351, d. Wharfedale Surety 57482 by Crôxteh Banker 4th 20503.  
 2864 II. (£5.)—W. B. HILL, Fairview Farm, Prestwood Road, Wolverhampton, for Salopian of Prestwood 92315, born March 23, bred by W. Ikin, Wen, Salop; s. Trespasser of Brookhurst 22516, d. Prestwood Combination 67140 by Prestwood Coronation 632203.  
 2862 III. (£3.)—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Coolham, Horsham, for Shipton Sam 92381, born Jan. 8; s. Pendley King 32179, d. Histon Royal Lady 63104 by Bookham of Hartshay 19369.  
 2868 R. N.—THE EXCS. OF THE LATE A. C. TWENTYMAN, Castlecroft, Wolverhampton, for Castlecroft Recorder.  
 H. C.—2895.

**Class 350.—Middle White Boars, farrowed in 1920, on or after July 1.<sup>1</sup> [16 entries.]**

2881 I. (£10.)—SOUTH YORKSHIRE ASYLUM COMMITTEE, Middlewood, Sheffield, for Wharncliffe Prince, born July 1; s. Histon Beauty 25345, d. Arcadian Graceful 3rd 71548 by Dividend of Wharfedale 20511.  
 2879 II. (£5.)—ALDERMAN FREDERIC SMITH, Bank House, Heeby, via Warrington, for Histon King 31738, born July 3; s. Peene Gunner 28201, d. Histon Beauty 63024 by Prestwood Duke 3rd 20567.  
 2882 III. (£3.)—J. A. H. STANFIELD, Bates, Wittersham, Kent, for Orney Royal, born Aug. 8; s. Wharfedale Hevel 28661, d. Midlothian Glossy 5d946 by Wharfedale 2nd Custodian 23279.  
 2878A R. N.—MRS. HAYES SADLER, Norsbury, Sutton Scotney, Hants, for Norsbury Virgil. H. C.—2877.

**Class 351.—Middle White Boars, farrowed in 1921. [19 entries.]**

2892 I. (£10.)—W. B. HILL, Fairview Farm, Prestwood Road, Wolverhampton, for boar, born Jan. 6; s. Prestwood David 6th 28233, d. Prestwood Alberta 3rd 57122 by Prestwood Jonathan 1st 20569.  
 2900 II. (£5.)—MRS. HAYES SADLER, Norsbury, Sutton Scotney, Hants, for boar, born Jan. 5; s. Royalty of Norsbury 28275, d. Norsbury Veronica 63294 by Durbar of Histon 21679.  
 2855 III. (£3.)—W. T. B. CARTERIDE, Sibbury, Worcester, for boar, born Jan. 10; s. Hammond's Perfection's Pride 31875, d. Fair Rosamond of Hammonds 72610 by Hope of Hammonds 25381.  
 2858 R. N.—JOHN CHIVERS, Estate Office, Histon, Cambridge, for Histon Woodman 3rd. H. C.—2898.

**Class 352.—Middle White Breeding Sows, farrowed in or before 1919.  
 [21 entries.]**

2907 I. (£10, R. N. for Champion, & R. N. for Cup.)—JOHN CHIVERS, Estate Office, Histon, Cambridge, for Histon Pianissimo 51542, born Jan. 13, 1916, farrowed March 24, 1921; s. Shrewsbury 19511, d. Perfection's Pride 40086 by Holywell Jonathan 14435.  
 2914 II. (£5.)—J. H. HOLLAND, Peene House, Newington, Folkestone, for Peene Beauty 2nd 63368, born Aug. 15, 1918, farrowed Jan. 18, 1921; s. Boaz of Peene 25769, d. Peene Polly 57084 by Peene Prince 21761.  
 2917 III. (£3.)—JOHN CHIVERS, Middlethorpe Hall, York, for Wharfedale Twinkie 63640, born Jan. 3, 1919, farrowed Jan. 30, 1921; s. Wharfedale Resistance 25657, d. Wharfedale Sparkling 51037 by Dividend of Wharfedale 20511.  
 2913 R. N.—W. B. HILL, Fairview Farm, Prestwood Road, Wolverhampton, for Prestwood Alberta 4th.  
 H. C.—2916.      C.—2908, 2921.

**Class 353.—Middle White Sows, farrowed in 1920, before July 1. [26 entries.]**

2939 I. (£10, Champion, & Cup.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Royal Lady, born Jan. 7; s. Preserver of Wharfedale 25493, d. Wharfedale Opal 57442 by Pendley Lad 23191.  
 2944 II. (£5.)—SOUTH YORKSHIRE ASYLUM COMMITTEE, Middlewood, Sheffield, for Wharncliffe Duchess, born Jan. 25; s. Lothian of Wharncliffe 28133, d. Wharncliffe Pattie 2nd 63359 by Pendley of Wharncliffe 28223.  
 2933 III. (£3.)—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Coolham, Horsham, for Shipton Royal Lady 4th, born Jan. 8; s. Pendley King 32179, d. Histon Royal Lady 63104 by Bookham of Hartshay 19369.

<sup>1</sup> Prizes given by the National Pig Breeders' Association.

Champion Gold Medal given by the National Pig Breeders' Association for the best Middle White Boar in Classes 348-351.

<sup>2</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Middle White Sow in Classes 352-354.

<sup>3</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Middle White Pig in Classes 348-354.

2926 R. N.—JOHN CHIVENS, Estate Office, Histon, Cambridge, for Histon Peerless 12th, born March 23; s. Histon Hollywood 25345, d. Histon Peerless 2nd 56712 by Shrewsbury 19511.

H. C.—2938. C.—2929, 2941.

Class 354.—*Middle White Sows, farrowed in 1920, on or after July 1.<sup>1</sup>* [17 entries.]

2959 I. (£10).—LEOPOLD C. PAGE, Middlethorpe Hall, York, for Pendley May Queen 4th, born July 2, bred by H. W. Bishop & J. W. Measures, Pendley, Tring; s. Pendley Queen 32183, d. Pendley May Queen 1st by Weeley Shrewsbury 23267.

2955 II. (£5).—JOHN CHIVENS, Estate Office, Histon, Cambridge, for Histon Choice 28th, born July 3; s. Shrewsbury 19511, d. Histon Choice 56894 by Durbar of Histon 21679.

2955 III. (£5).—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Cotham, Horsham, for sow, born July 30; s. Pendley King 32179, d. Histon Choice 4th 63028 by Histon Royalty 23125.

2960 R. N.—MR. M. J. ROWLANDS, Nash Farm, Keston, Kent, for Keston Lady Holly 2nd. H. C.—2902. C.—2961, 2963.

Class 355.—*Three Middle White Sows, farrowed in 1921.* [10 entries.]

2971 I. (£10).—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Cotham, Horsham, for sows, born Jan. 2; s. Pendley King 32170, d. Histon Lady Gracious 63062 by Shrewsbury 19511.

2976 II. (£5).—DR. M. J. ROWLANDS, Nash Farm, Keston, Kent, for sows, born Jan. 8; s. Keston Shrewsbury 23127, d. Histon Lady 6th 63060 by Bookham of Barthay 19369.

2975 III. (£5).—DR. M. J. ROWLANDS, for sows, born Jan. 16; s. Keston Shrewsbury 23127, d. Prestwood Prolific 8th 57174 by Prestwood Acrobat 1st 23107.

2969 R. N.—S. F. ENGE, Gallops Homestead, Ditchling, Hassocks, for Albany Queen Lilac 1st, 2nd and 3rd.

### Tamworths.

Class 356.—*Tamworth Boars, farrowed in or before 1919.* [3 entries.]

2978 I. (£10, & R. N. for Champion<sup>2</sup>).—ROBERT IBBOTSON, Dorridge, Knowle, Warwickshire, for Knowle Champion 2nd 35443, born April 29, 1919; s. Basildon Max 25683, d. Knowle Middleton 11th 46011, known as Antonio 18153.

2980 II. (£5).—MR. PHILIP BATES, Green House, Whitacre, nr. Colehill, Warwickshire, for Whitacre Surprise 25511, born Jan. 3, 1919; s. Enterprise of Whitacre 21841, d. Whitacre Ida 46116 by Kerr's Choice 19352.

2979 III. (£5).—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Basildon Alex 28373, born Jan. 2, 1919; s. Brodsworth Able 23311, d. Knowle Arbury 3rd 53032 by Knowle General Joffre 20655.

Class 357.—*Tamworth Boars, farrowed in 1920.<sup>1</sup>* [4 entries.]

2982 I. (£10).—ROBERT IBBOTSON, Dorridge, Knowle, Warwickshire, for Knowle Bedford, born April 30; s. Basildon Max 25683, d. Constance of Knowle 63930 by Percy of Brodsworth 21900.

2981 II. (£5).—CHARLES L. COXON, Milton Shobdon, Kingsland S.O., Herefordshire, for Bishop of Milton, born Jan. 3, 1920; s. Mons of Middleton 25776, d. Middleton Mainz 57614 by Mancunian of Middleton 23341.

2983 III. (£5).—ROBERT IBBOTSON, for Knowle Buckingham, born April 30; s. Basildon Max 25683, d. Constance of Knowle 63930 by Percy of Brodsworth 21900.

2984 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Knowle Darlington.

Class 358.—*Tamworth Boars, farrowed in 1921.* [6 entries.]

2986 I. (£10, Champion,<sup>2</sup> & R. N. for Cup<sup>3</sup>).—CHARLES L. COXON, Milton Shobdon, Kingsland S.O., Herefordshire, for Milton Bishop 2nd, born Jan. 6; s. Mons of Middleton 25776, d. Middleton Mainz 57614 by Mchedlene of Middleton 23343.

2989 II. (£5).—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for boar, Basildon Piraway 25821; s. Whitacre Piraway 25821, d. Basildon Arbury 9th 63874 by Whitacre Piraway 25821.

2985 III. (£5).—CHARLES L. COXON, for Milton Bishop, born Jan. 6; s. Mons of Middleton 25775, d. Middleton Mainz 57614 by Mchedlene of Middleton 23343.

2987 R. N.—ROBERT IBBOTSON, Dorridge, Knowle, Warwickshire. H. C.—2988.

<sup>1</sup> Prizes given by the National Pig Breeders' Association.

<sup>2</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Tamworth Boar in Classes 356-368.

<sup>3</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Tamworth Pig in Classes 356-360.

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**Class 359.—Tamworth Breeding Sows, farrowed in or before 1919. [3 entries.]**

2991 I. (10, & R. N. for Champion.)—ROBERT BIBSTON, Dorridge, Knowle, Warwickshire, for Knowle Favourites 33690, born March 10, 1919, farrowed Jan. 24, 1921; s. Knowle Arundel 21856, d. Knowle Madeline 2nd 40010 by Knowle Antonio 18173.

2993 II. (E5.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Gorring, Reading, for Basildon Arbury 9th 63874, born July 29, 1919, farrowed Jan. 12, 1921; s. Whitaacre Firaway 25821, d. Basildon Arbury 57495 by Bradsworth Able 23231.

**Class 360.—*Tamworth Sows, farrowed in 1920.* [8 entries.]**

3001. L. (\$10, Champion, & Cup)—B. I. PHILIP, Botts Green House, Whitaacre, near Coleshill, Warwickshire, for sow, born Jan. 14; *s.* enterprise of Whitaacre 21841, *d.* Whitaacre Mirth 40214 by Lord Bobbie 18251.

2998. H. (55)—ROBERT LIBBOTHORP, Dorridge, Knowle, Warwickshire, for sow, born Jan. 24, bred by Major J. A. Morrison, Basildon Park, Reading; *s.* Whitaacre Firaway 28821, *d.* Mr. G. G. Queen and 67566 by Brodsworth Able 23311.

2999. H. (23)—CHARLES COXON, Coniston Shotton, Cheshire S.O., Herfordshire, for Milton Beauty, born July 9; *s.* Mons of Middleton 25773, *d.* Middleton Malines 57610 by Mancunian of Middleton 23341.

2995. R. N.—CHARLES L. COXON, for Beauty of Milton 2nd. H. C.—2997, 2999. C.—3000.

**Class 381.—Three Tamworth Sows, farrowed in 1921. [4 entries.]**

3003 I. (10)—ROBERT IBBOSON, Dorridge, Knowle, Warwickshire, for sows, born Jan. 6; s. Knowle Antony 2nd 28407, d. Content of Knowle 63392 by Percy of Brodsworth 21909.

3003 II.—CHARLES L. COXON, Milton Shobdon, Kingsland, Herefordshire, for sows, born Jan. 22; son of Middleton 25775, d. Middleton Mahines 57610 by Mancunian of Middleton 2341.

3005 III. (8)—B. I. PHILIP, Botts Green House, nr. Colshill, Warwickshire, for sows, born Jan. 6; s. Arbury Royal 28371, d. Whitacre Countess 19th 64074 by Enterprise of Whitacre 21841.

## Berkshires.

**Class 362.—Berkshire Boars, farrowed in or before 1919. [12 entries.]**

3015 L. #10, & H. N. for Champion)—W. HOWARD PALMER, Stokes Farm, Wokingham, for Murrell Primes 20332, born June 29, 1817; s. Milner King 18364, d. Murrell Primrose 1850 by Whitley Longfellow 1809.

3014 H. #15.—W. HOWARD PALMER, for Hammonds Hototton 21218, born May 18, 1818, bred by H. R. Beeton, Hammonds Cheekendon, Reading; s. Hammonds Hyphen 19172, d. Compton Glanest 221983 by Iwerne 1856.

3010 L. #10, & H. N. for Champion)—W. HOWARD PALMER, for Highclere Hero 21401, born June 18, 1848, bred by the Earl of Harewood, Highclere, Hants; s. Iwerne King Hill 18469, d. Highclere Glanest 19002 by Highclere Postmaster 18444.

3011 R. N. ALFRED C. KING, Brasfield Manor, Romsey, Hants, for Brasfield Baronet. H. C.—3017. C.—3009. 3013.

Class 368.—*Berkshire Boars, farrowed in 1920, before July 1.*<sup>4</sup> [18 entries.]

3031 L (F10). Champion.<sup>2</sup> Champion,<sup>2</sup> & Cup.<sup>—</sup>—MILES NAGLE, Farnham Place, Charter Ley, Basingstoke, for Pamber Ugly Duckling 22899, born March 13; s. Minley King 18364, d. Jamacia Waie 20576 by Mountaineer Warrior 17584.

3028 II. (E5).—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Basildon Mike 24525, born Jan. 28; s. Murrell Mike 21289, d. Pet 2024 by Herrard Othello 17097.

3035 III. (E3).—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for Eaton Warrior, born March 21; s. War Loan 18694, d. Princess Royal 5th 19095 by Motcombe Cognac 18605.

3019 R. N.—A. H. Bough, Thornton Hall, Thorntonhall Station, by Glasgow, for Thornton-hall Chutney.

H. C.—3023, 3025, 3032. C.—3030.

<sup>1</sup> Champion Gold Medal given by the National Pig Breeders' Association for the best Tamworth Sow in Classes 359 and 360.

<sup>4</sup> Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Tamworth Pig in Classes 356-360.

\* Champion Prize of £5 5s. given by the British Berkshire Society for the best Berkshire Boar in Classes 362-365.

<sup>4</sup> Champion Prize of £10 10s. given by the British

\* Champion Prize of £10 10s. given by the British Berkshire Society for the best Berkshire Boar or Sow in Classes 362-388.

The Eaton Silver Challenge Cup, value Fifty Guineas, given through the British Berkshire Society for the best Boar or Sow in Classes 362-368.

**Class 364.—Berkshire Boars, farrowed in 1920, on or after July 1.<sup>1</sup> [16 entries.]**

3049 I. (£10.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Basildon Rubin 24670, born Sept. 18; *s.* Iwerne Ronald 2nd 22107, *d.* Iwerne Virtue 22096 by Manor Pioneer 2004.  
 3049 II. (£5.)—THE HON. LOUIS G. GREVILLE, Hole House, Woodford, Salisbury, for Badminton Meggy 24574, born July 6, bred by H. Butler, Badminton; *s.* Badminton Pioneer 21075, *d.* Sister Meg 21069 by Hurry On 19635.  
 3043 III. (£3.)—L. HARRISON & CO., LTD., Pedigree Live Stock Farms, Cootham, Horsham, for Peaf Champion's Pride, born July 19; *s.* Revenge 22316, *d.* Reading Berkshire Champion 22212 by Herard 2nd 20227.  
 3045 R. N.—JAMES ISMAY, Iwerne Minster House, Blandford, for Iwerne Nobelman 23972, born July 2; *s.* Murrell Premier 21570, *d.* Compton Maggie 22270 by Moundsmore Warrior 17564.  
 H. C.—3048, 3051. C.—3046.

**Class 365.—Berkshire Boars, farrowed in 1921. [15 entries.]**

3057 L. (£10.)—LORD EBBY, North Farm, Brightwells, Wallingford, for Sotwell Premier, born Jan. 1, 1921, Herard Premier 21853, *d.* Iwerne Megan 3rd 21739 by Hurry On 19635.  
 3063 II. (£5.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for boar, born Jan. 21; *s.* Murrell Mike 21239, *d.* Iwerne Virtue 22098 by Manor Pioneer 20004.  
 3062 III. (£2.)—ALBERT G. MARLOW, Preston Deanery Hall, Northampton, for Preston Lad, born Jan. 3; *s.* Pyramids 1857, *d.* Herard Lass 20380 by Manor Record 20276.  
 3051 R. N.—LAURENCE CURRIE, Minley Manor, Farnborough.  
 H. C.—3001, 3064. C.—3032, 3039, 3060.

**Class 366.—Berkshire Breeding Sows, farrowed in or before 1919. [18 entries.]**

3077 I. (£10.)—R. N. for Champion<sup>2</sup>)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Basildon Princess 3rd 22030, born Jan. 7, 1919, farrowed Jan. 5, 1921; *s.* Manor Longfellow 19254, *d.* Basildon Princess 2nd 20731 by Goldicot Rob 20004.  
 3078 II. (£5.)—MAJOR J. A. MORRISON, D.S.O., for Iwerne Virtue 22096, born April 1, 1919, farrowed Jan. 21, 1921, bred by J. H. Ismay, Iwerne Minster House, Blandford; *s.* Manor Pioneer 20004, *d.* Virtue 20108 by Manor Daniel 19739.  
 3081 III. (£2.)—CAPTAIN J. R. RENWICK, Whitewall, Malton, Yorks, for Conhal Surprise 23064, born July 1, 1919, farrowed Jan. 4, 1921; *s.* Noble Hector 20130, *d.* Herard Jessie 4th 19885 by Express R. 17159.  
 3080 R. N.—W. HOWARD PALMER, Stokes Farm, Wokingham, for Murrell Lassie.  
 H. C.—3072, 3074, 3084. C.—3083.

**Class 367.—Berkshire Sows, farrowed in 1920, before July 1. [24 entries.]**

3094 I. (£10.)—R. N. for Champion<sup>3</sup>)—R. N. for Cup<sup>4</sup> & Champion<sup>5</sup>)—JAMES ISMAY, Iwerne Minster House, Blandford, for Manor Marig 24321, born March 5, bred by Arthur Hiscock, Manor France Farm, Blandford; *s.* Manor Buckmaster 22254, *d.* Manor Orange Girl 22560 by King's Cup 20623.  
 3103 II. (£5.)—JAMES NAGLE, Palmer Place, Charter Ley, Basingstoke, for Palmer Prolific 22705, born April 10; *s.* Minley King 18364, *d.* Compton Guess 20188 by Manor Baronet 18978.  
 3097 III. (£3.)—LADY LIGARD, Little Parkhurst, Abinger Common, Dorking, for Abinger Vanity 23713, born March 12; *s.* Kingston Peacemaker 21339, *d.* Bagian Vanity 20522 by Whitley Wiseman 19344.  
 3104 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for Princess Mary.  
 H. C.—3104, 3106, 3108. C.—3092, 3095, 3096, 3102.

**Class 368.—Berkshire Sows, farrowed in 1920, on or after July 1. [16 entries.]**

3109 I. (£10.)—H. R. BRETON, Hammonds, Checkendon, Reading, for sow, born July 12; *s.* Hammonds Hades 21041, *d.* Hammonds Hobbledehoy 17054 by The Sacristan of Stratton 15832.  
 3113 II. (£5.)—THE HON. LOUIS G. GREVILLE, Hole House, Woodford, Salisbury, for Badminton Meggy 24514, born July 6, bred by Harry Butler, Badminton, Glos.; *s.* Badminton Pioneer 21075, *d.* Sister Meg 21069 by Hurry On 19635.  
 3122 III. (£3.)—W. HOWARD PALMER, Stokes Farm, Wokingham, for Murrell Betka 6th, born Aug. 14; *s.* Murrell Ringleader 21904, *d.* Murrell Betka 19973 by Murrell King 19579.  
 3118 R. N.—ALBERT G. MARLOW, Preston Deanery Hall, Northampton, for Preston Brenda.  
 C.—3117, 3119, 3123.

<sup>1</sup> Prizes given by the British Berkshire Society.

<sup>2</sup> Champion Prize of £5 5s. given by the British Berkshire Society for the best Berkshire Sow in Classes 366-368.

<sup>3</sup> Champion Prize of £10 10s. given by the British Berkshire Society for the best Berkshire Boar or Sow in Classes 362-368.

<sup>4</sup> The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the British Berkshire Society for the best Boar or Sow in Classes 362-368.

6      *Awards of Live Stock Prizes at Derby, 1921.*

**Class 369.—Three Berkshire Sows, farrowed in 1921. [14 entries.]**

3130 I. (f10.)—LAURENCE CURRIE, Minley Manor, Farnborough, for sows, born Jan. 18; *s.* Manor Clipper 22563, *d.* Minley Mary 19935 *by* Minley Lion 18805.  
 3132 II. (f5.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for Eaton Cherry, Eaton Cherry Blossom, Eaton Berenice, born Jan. 26 and Feb. 13; *ss.* War Loin 19694 and Eaton Black Don 22746, *ds.* Kingston Cherry 19987 *by* Warrior Bold 3rd 19315 and Eaton Bonny Blue 22444 *by* Manor Record 20276.  
 3134 III. (f23.)—LADY LUGARD, Little Parkhurst, Abinger Common, Dorking, for sows, born Jan. 14 and Feb. 2; *s.* Abinger Gardner 21956, *ds.* Eaton Princess Royal 4th 22451 *by* Manor Record 20276 and British Phyllis 20534 *by* Whitby Wiseman 19344.  
 3131 R. M.—LORD EBBEN, North Farm, Brightwells, Wallingford, for Sotwell Megan 2nd, Sotwell Megan 3rd, Anale of Sotwell.  
*H. C.*—3125, 3137.      *C.*—3128, 3127, 3126.  
 Cup.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading.  
 Equal R. M. for Cup.—JAMES NAGLE and W. HOWARD PALMER.

**Large Blacks.**

**Class 370.—Large Black Boars, farrowed in or before 1919. [19 entries.]**

3149 I. (f10, & Champion.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Fentongolian Result 9545, born Sept. 13, 1918, bred by W. L. Hosking & Sons, Fentongolian, Cornwall; *s.* Treveglos Leader 3rd 6015, *d.* Treveglos Smiling Lady 3rd 20850 *by* Valley None Such 5401.  
 3140 II. (f5.)—F. P. BROWN, Kingston Farm, Chilerton, Isle of Wight, for Trevisquites Surprise 9583, born March 1, 1919, bred by Thomas Warne, Trevisquite Manor, Cornwall; *s.* Tartar President 7017, *d.* Trevisquite Lovelights 7th 19246 *by* Boss of the Valley 3355.  
 3148 III. (f23.)—BRIAN HOOLE, The Nook, Bloxham, Banbury, for Navington Nook 11483, born Aug. 13, 1919, bred by C. J. Twist, The Nook, South Newington, Banbury; *s.* Vahan Perfection 4th 7759, *d.* Trevisquite Vahan 9th 26622 *by* St. Mervyn Boss of the Hill 6737.  
 3156 R. M.—GEORGE WINDSOR, Temple Lodge, Cross Roads, Maidenhead, for Vahan Kingdom. *H. C.*—3147.      *C.*—3139, 3151.

**Class 371.—Large Black Boars, farrowed in 1920.<sup>3</sup> [34 entries.]**

3162 I. (f10, & R. M. for Champion.)—WILLIAM BRACY, Manor House, Martham, Great Yarmouth, for Martham Perfection 15267, born Jan. 22; *s.* Cleave Perfection 5801, *d.* Sudbourne Trigger 9353 *by* Sudbourne Laird 6505.  
 3169 II. (f23.)—S. F. DODGE, Ballingay, Headstone, Ditchling, Hassocks, Sussex, for Vahan Perfection 37th 15475, born Jan. 27; *s.* Vahan Perfection 4th 7759, *d.* Vahan Dark Lady 1st 25170 *by* Vahan Molva 2nd 5801.  
 3164 III. (f23.)—WILLIAM BRACY, for Martham What's Wanted 15283, born May 22; *s.* Sudbourne Trigger 9353, *d.* Bixley Bountiful A 34804 *by* Swardeston That's Him 7547.  
 3185 R. M.—THOMAS WARNE, Trevisquite Manor, St. Mabyn, Cornwall, for Treator Pioneer. *H. C.*—3163, 3168, 3174.      *C.*—3138.

**Class 372.—Large Black Boars, farrowed in 1921. [62 entries.]**

3224 I. (f10.)—A. DYSON LAUREN, Homefield, Sevenoaks, for Maxwellton Black Prince 17th 17387, born Jan. 13; *s.* Tinten King John 2nd 12489, *d.* Maxwellton Souvenir 768 39375.  
 3215 II. (f5.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Director 2nd 17441, born Jan. 25; *s.* Wintingham Premier 11455, *d.* Docking Queenie 24244 *by* Cleaver Perfection 5801.  
 3201 III. (f23.)—BEN E. BRIGHTON, New York, Lincoln, for Hawthorn Hero 2nd 17707, born Jan. 1; *s.* Warsop Ring the Bell 11013, *d.* Warsop Totle 23718 *by* V. N. of Drayton 5607.  
 3197 R. M.—THE HON. MRS. BORRETT, Transford Hall, Saxmundham, for Transford Corporal. *H. C.*—3193, 3198, 3203, 3214, 3217, 3245.      *C.*—3196, 3205, 3220, 3233, 3241, 3250.

**Class 373.—Large Black Breeding Sows, farrowed in or before 1919. [25 entries.]**

3275 I. (f10, & Cup.)—WALTER J. WARREN, Deacons Farm, Staplegrove, Taunton, for Kibbear Lady Allies 17246, born May 6, 1916, farrowed Jan. 15; *s.* Drayton Disappointment 2nd 4573, *d.* Kibbear Lady Annie 14050 *by* Cornwood Magistrate 4271.

<sup>1</sup> The "Berkshire" Silver Challenge Cup, value £20, given by the British Berkshire Society for the most points awarded in a combination of entries in Classes 302-360 on the basis of: Four points for a first prize, three points for a second prize, two points for a third prize, one point for a fourth prize, two points for a Championship, and one point for a Reserve for Championship.

<sup>2</sup> Champion Prize of £10 given by the Large Black Pig Society for the best Large Black Boar in Classes 373 and 374.

<sup>3</sup> Prizes given by the Large Black Pig Society.

<sup>4</sup> Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Large Black Sow in Classes 373 and 374.

3260 II. (E5.)—G. A. GOODCHILD, Great Yeldham, Essex, for Tartar Queen 7th 17522, born July 13, 1918, farrowed Jan. 25; *s.* Kibbear John 1st 5381, *d.* Tartar Queen 2nd 11612 by Bentley Budget 3035.

3265 III. (E5.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop, for Knowsley Opportune 8th 22134, born May 31, 1918, farrowed March 10, bred by the Earl of Derby, Knowsley, Prescot; *s.* McHeather Lad 5491, *d.* Valan Opportune 15100 by Drayton Vahan 4181.

3269 R. N.—A. BEVERLEY RINGER, Swardston, Norfolk, for Swardston Bellinda. H. C.—3259, 3275. C.—3256.

Class 356.—*Large Black Sows, farrowed in 1920.* [63 entries.]

3308 L. (410, & R. N. for Cup.)—TERAH F. HOOLBY, Dry Drayton, Cambridge, for Cornwood Lass 4716, 38100, born Jan. 8, bred by J. H. Gitter, Cornwood; *s.* Pentongolian Naik 0455, *d.* Cornwood Typist 18482 by Kibbear King 6007.

3333 II. (E5.)—JOHN WARNE, Tregonyhaw, Tregonyhaw, Grampound Road, Cornwall, for Trevegas Lass 20th 44732, born Feb. 16; *s.* Valun Melva 2nd 5601, *d.* Trevegas Lass 19th 23870 by Valley None Such 5401.

3326 III. (E5.)—A. BEVERLEY RINGER, Swardston, Norfolk, for Swardston Garbitas 38973, born Jan. 2; *s.* Bixley Tyrant 11471, *d.* Drayton Garbitas 33786 by Loughtor Marvel 4437.

3319 R. N.—J. PARK, The Grange, Egginton, Derby, for Gieba Express. H. C.—3286, 3323, 3337, 3340. C.—3283, 3293, 3304, 3315.

Class 375.—*Three Large Black Sows, farrowed in 1921.* [24 entries.]

3331 L. (410.)—TERAH F. HOOLBY, Dry Drayton, Cambridge, for Drayton Diligent 1st 69344, 2nd 69345, and 3rd 69346, born Jan. 25; *s.* Wintingham Premier 11453, *d.* Dock-land Queen 12244 by Gitter 18482, *perfect* 5301.

3358 II. (E5.)—A. BEVERLEY RINGER, Swardston, Norfolk, for Swardston Faith 50548, Hope 50400, Charity 50462, born Jan. 20; *s.* Valley Good Boy 18733, *d.* Drayton Garbitas 33786 by Loughtor Marvel 4437.

3343 III. (E5.)—P. BROWNS, Kingston Farm, Chilerton, Isle of Wight, for Kingston Duchess 57294, Kingston Daisy 57226, Kingston Darling 57228, born Jan. 3; *s.* Trevisquite Surprise 9583, *d.* Kingston Black Bess 26846 by Drayton Kingston 6993.

3360 R. N.—STANLEY A. STIMSON, Bixley, Norwich, for Bidey Darling, Bixley Darling 1st and 2nd. H. C.—3356, 3359, 3363, 3365. C.—3347, 3355.

Gloucestershire Old Spots.<sup>2</sup>Class 376.—*Gloucestershire Old Spots Boars, farrowed in or before 1919.*

[8 entries.]

3369 L. (410, & R. N. for Champion.)—ROBERT W. HONES & SONS, Kelmscott, Lechlade, for Woodstock King 1546, born March 5, 1919, bred by John Douglas, Kingswood, Bristol; *s.* Bladborough Charr 22nd 693, *d.* Woodstock Queen 2149 by Volland King 13.

3370 II. (E5.)—T. KING, Lower Barnes, Wotton-under-Edge, Glos., for Ithlis Major 2nd 2084, born Nov. 16, 1919; *s.* Gilslake Major 622, *d.* Kitesnest Josephine 2613 by Coleshill Bradley 240.

3368 III. (E5.)—SIR MERVYN M. BULLER, BT., Broomhill, Sprentton, Northampton, for Gilslake General 1448, born June 1919, bred by John H. Thomas, Cudleigh Court Farm, Spetchley; *s.* Oaklands Hero 414, *d.* Gilslake Matron 2545 by Woodlands Jumbo 71.

3373 R. N.—W. G. WILLIAMS, Coleshill Home Farm, Highworth, Wilts, for Coleshill Wanderer 2nd. H. C.—3367.

Class 377.—*Gloucestershire Old Spots Boars, farrowed in 1920, before July 1.* [15 entries.]

3379 I. (515, Champion,<sup>4</sup> & R. N. for Champion.)—WALTER FROST, The Red Home, Almondsbury, Bristol, for Gilslake Sportsman 2597, born Jan. 26, bred by John H. Thomas, Cudleigh Court, Spetchley; *s.* Cleve Hill Actor 664, *d.* Gilslake Duchess 3rd 2539 by Oaklands Hero 414.

3384 II. (E5.)—FRANCICK MOUNTFORD, New Tree Farm, Northfield, Birmingham, for Gilslake Fortune, born Jan. 26, bred by J. H. Thomas, Cudleigh Court Farm, Spetchley; *s.* Clevehill Actor 664, *d.* Gilslake Duchess 3rd 2539 by Oaklands Hero 414.

<sup>1</sup> Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Large Black Sow in Classes 373 and 374.

<sup>2</sup> £106 toward these Prizes were given by the Gloucestershire Old Spots Pig Society.

<sup>3</sup> Silver Challenge Cup, value Twenty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar in Classes 376-379.

<sup>4</sup> Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 376-382.

3376 III. (£6.)—H. C. BAKER, Oaklands, Almondsbury, Glos., for Ashton Conqueror, born March 10, bred by the University of Bristol, Long Ashton, Bristol; *s.* Daglingworth Prince 112, *d.* Hobwell Duchess 3086 by Colehill Monarch 464.

3382 I. (£12.)—N. ALBERT H. HAMPTON, Haycroft Sherborne, Northleach, for River Sambo. H. C.—3874. C.—3388.

**Class 378.—Gloucestershire Old Spots Boars, farrowed in 1920, on or after July 1.** [16 entries.]

3393 I. (£12.)—P. W. BIGGINS, Netherton Wood, Nailsea, Bristol, for Netherton Belgrave, born Nov. 8; *s.* Ashton Bloomer 1741, *d.* Nailsea Bessie 4576 by Failand Chapple 900.

3396 II. (£8.)—T. KING, Lower Barnes, Wotton-under-Edge, Glos., for Ithehill Champion 2nd, born Aug. 4; *s.* Ithehill Champion 2080, *d.* Kitesnest Josephine 2613 by Colehill Bradley 240.

3391 III. (£6.)—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., for Thornbury Jingo, born Aug. 12; *s.* Gilsdale Admiral 907, *d.* Thornbury Jemima.

3401 R. N.—FRANCIS HENRY REA, Kitesnest Farm, Wotton-under-Edge, for Kitesnest Style. H. C.—3389. C.—3403, 3404.

**Class 379.—Gloucestershire Old Spots Boars, farrowed in 1921.** [31 entries.]

3410 I. (£12.)—HENRY A. BROWET, Highfield, Tadcaster, for Highfield Admiral, born Jan. 9; *s.* Selby Baron 10th 1224, *d.* Goff Betty 2nd 6043 by Croxton Fickle Boy 803.

3420 II. (£8.)—SIR F. HERVEY-BATHURST, BT., D.S.O., Somborne Park, Stockbridge, born Jan. 2; *s.* Hodgecombe Hero 2016, *d.* Langford Alice 4683 by Langford Noble 815.

3432 III. (£5.)—SIR W. GEORGE WATSON, BT., Sulhamstead House, Reading, for Sulhamstead Leighton, born March 4; *s.* Hodgecombe Hero 2016, *d.* Winterbourne Jill 4683 by Woodlands Julian 214. H. C.—3417, 3423, 3427. C.—3409, 3411, 3414.

**Class 380.—Gloucestershire Old Spots Breeding Sows, farrowed in or before 1919.** [15 entries.]

3447 I. (£10, Champion,<sup>1</sup> & Champion,<sup>2</sup>)—CAPTAIN HERBERT MUSKER, Rushford Hall, Thetford, for Redgrave Countess 6424, born Aug. 6, 1919, farrowed Jan. 19, bred by H. J. Staff, Redgrave, Diss, Norfolk; *s.* Bounds Apple 991, *d.* Bergholt Ford 2782 by Yate King 491.

3442 II. (£5.)—WALTER FROST, The Red House, Almondsbury, Bristol, for Clevehill Ada 1st 4502, born Feb. 14, 1919, farrowed April 10, bred by Henry Bridgeman, Clevehill, Downend, Bristol; *s.* Shupway Prince 284, *d.* Clevehill Rachel by Failand Hero 238.

3444 III. (£5.)—FRANCIS G. JONES, Church Farm, Mitchel Troy, Monmouth, for Bounds Primrose 7th 2068, born Oct. 17, 1918, farrowed March 1, bred by H. Weston & Son, The Bounds, Much Marcle, Ledbury; *s.* Chaffield General 237, *d.* Peault Primrose 1783 by Failand Duke 74.

3441 R. N.—ROBERT J. DOWNING, Wintersell Farm, Edenbridge, for Lorridge Duchess 3rd. H. C.—3440, 3445.

**Class 381.—Gloucestershire Old Spots Sows, farrowed in 1920, before July 1.** [28 entries.]

3478 I. (£15, & R. N. for Champion,<sup>2</sup>)—JAMES W. WOOD, Staincross Hall, Barnsley, for Dinedor Bountiful, born Jan. 3, bred by Captain H. P. Hamilton, Breinton, Hereford; *s.* Gilsdale Major 822, *d.* Sporting Beauty 1012.

3477 II. (£10.)—W. G. WILLIAMS, Colehill Home Farm, Highworth, Wilts, for Colehill Countess 25th, born Feb. 15; *s.* Gilsdale Marquis 1275, *d.* Colehill Countess 1373 by Kitesnest Recruiter 221.

3475 III. (£5.)—W. G. WILLIAMS, for Colehill Countess 20th, born Feb. 18; *s.* Gilsdale Marquis 1275, *d.* Colehill Countess 1373 by Kitesnest Recruiter 221.

3458 R. N.—ROBERT J. DOWNING, Wintersell Farm, Edenbridge, for Lyndhurst Lizzie 2nd. H. C.—3452, 3450, 3466, 3471, 3473.

**Class 382.—Gloucestershire Old Spots Sows, farrowed in 1920, on or after July 1.** [13 entries.]

3480 I. (£12.)—FRANCIS HENRY REA, Kitesnest Farm, Wotton-under-Edge, Glos., for Kitesnest Jill, born July 27; *s.* Ithehill Champion 2080, *d.* Kitesnest Judy 2nd 717 by Bradley Pride 132.

3484 II. (£8.)—CAPTAIN H. P. HAMILTON, Breinton, Hereford, for Dinedor Brilliant, born July 2; *s.* Gilsdale Major 822, *d.* Sporting Beauty 2912.

<sup>1</sup> Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 376-382.

<sup>2</sup> Silver Challenge Cup, value Twenty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Sow in Classes 380-382.

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3485 **III. (25.)**—**FREDERICK MOUNTFOORD**, Yew Tree Farm, Northfield, Birmingham, for **Barbours Queen**, born Aug. 8, bred by J. H. Thomas, Cudleigh Court, Snettisham; *s.* **Wimborne Queen** 1198, *d.* **Gislae Duchess** 2nd 600 by **Woodlands Jumbo** 71.

3483 **II. (24.)**—**CHARLES H. F. HAMILTON**, for **Dinedor Bloom**.

*H. C.—3492, 3487.*

**Class 383.—Three Gloucestershire Old Spots Sows, farrowed in 1921.** [11 entries.]

3493 **I. (12.)**—**FRANCIS GEORGE BELL**, Huntingford, Farm, Charlton, Glos., for **Huntingford Contender**, Huntingford Sow, 2nd, and Huntingford Calfress, 3rd, born Jan. 19; *s.* **Itchells Major** 2nd 2084, *d.* **Huntingford Susie** 6536 by **Kingswest Jester** 881.

3501 **II. (58.)**—**SIR W. GEORGE WARSON**, Br. Sulhamstead House, Reading, for **Sulhamstead Betsy** 1st 5119 by **Sultan** 3rd of **Hollywood Tower** 400.

3500 **III. (25.)**—**LORD SHERBORNE**, Sherborne Park, Northleach, Glos., for **Sherborne Jane**, **Sherborne Jane** 2nd, **Sherborne Jane** 3rd, born Jan. 21; *s.* **Gislae Major** 622, *d.* **Woodstock Jane** 4473 by **Shipway Prince** 284.

3494 **R. N.—THE REV. WILLIAM VEASEY CHILWELL**, King's Bromley Vicarage, Lichfield, for **Bromley Primrose**, **Bromley Primula** and **Bromley Prudence**.

*H. C.—3492, 3498, 3502.*

**Lincolnshire Curly-Coated.**

**Class 384.—Lincolnshire Curly-Coated Boars, farrowed in or before 1920.** [4 entries.]

3503 **I. (210, & Champion.)**—**FREDERICK E. BOWSER**, Wigtoft, Boston, Lincs, for **Burton Last** 6394, born Feb. 8, 1919, bred by the late M. Holmes, Green, Heckington; *s.* **Curly Marchant** 3971, *d.* **Burton Handsome** 11070 by **Lafora** 8th 3374.

3504 **II. (45, & R. N. for Champion.)**—**FREDERICK E. BOWSER**, for **Wigtoft Kirkby** 41218, born March 3, 1918, bred by Norton Scorer, East Kirkby, Boston; **Highbeld Swell** 3833, *d.* **East Kirkby Ladylike** 1st 10936 by **Jakley Donor** 3471.

**Class 385.—Lincolnshire Curly-Coated Boars, farrowed in 1921.** [7 entries.]

3508 **I. (110.)**—**FREDERICK E. BOWSER**, Wigtoft, Boston, for **Midville Last**, born Jan. 22, bred by F. J. Cawdwell, Sibsey, Boston; *s.* **Benton Last** 4185, *d.* **Midville Beauty** 23rd 1118 by **Curly Marchant** 3971.

3507 **II. (28.)**—**W. ABBOTT**, Swaton, Billingborough, Lincoln, born Jan. 20; *s.* **Ponton Prince** 2nd *d.* **Bold Evolution** by **Carrington Grange Evolution** 2nd 1389.

3510 **R. N.—GEORGE FEER**, Toletthorpe House, Deeping St. Nicholas, Spalding, for **Deeping Twenty**.

*H. C.—3511, 3512.*

**Class 386.—Lincolnshire Curly-Coated Breeding Sows, farrowed in or before 1919.** [6 entries.]

3516 **I. (210, & Champion.)**—**GEORGE FEER**, Toletthorpe House, Deeping St. Nicholas, Spalding, for **Deeping Marshland** 10808, born August 10, 1914, farrowed March 10, bred by **Leeds Harvey**, Spalding; *s.* **Bold King** 2807, *d.* **Marshland Bobtail** 10146 by **Marshland Duke** 2073.

3514 **II. (45, & R. N. for Champion.)**—**W. ABBOTT**, Swaton, Billingborough, Lincs, for **Bold Abbottess** 3rd, born Jan. 1919, farrowed Feb. 2; *s.* **Curly Marsham** 7th, *d.* **Bold Abbottess** 2nd 10590 by **Alvingham King** 4th 2023.

3515 **R. N.—FREDERICK E. BOWSER**, Wigtoft, Boston, for **Wigtoft Sensation** 38th.

*H. C.—3513.*

**Class 387.—Lincolnshire Curly-Coated Sows, farrowed in 1920.** [5 entries.]

3521 **I. (110.)**—**GEORGE FEER**, Toletthorpe House, Deeping St. Nicholas, Spalding, for **Deeping Alice**, born Feb. 10, bred by John T. Braybrook, Cowlish, Spalding; *s.* **Deeping Royal** 4115, *d.* **Weston Lady** by **Highbeld Shot**.

3522 **II. (55.)**—**GEORGE FEER**, for **Deeping Lady**, born Jan. 8; *s.* **Deeping Earl Kirkby** 4113, *d.* **Deeping Marshland** 10808 by **Bold King** 2807.

3524 **R. N.—FREDERICK SIMPSON**, Charnwood, Lowthorpe, for **Charnwood Jewel** 24th.

*H. C.—3520, 3523.*

**Class 388.—Three Lincolnshire Curly-Coated Sows, farrowed in 1921.** [4 entries.]

3525 **I. (110.)**—**W. ABBOTT**, Swaton, Billingborough, Lincs, for sows, born Jan. 20 and Feb. 2; *s.* **Ponton Prince**, *d.* **Bold Evolution** by **Carrington Grange Evolution** 2nd 1389 and **Bold Abbottess** 3rd by **Curly Marsham** 7th.

<sup>1</sup> Champion Prize of £5 5s. given by the Lincolnshire Curly-Coated Pig Breeders' Association for the best Boar in Classes 384 and 385.

<sup>2</sup> Prizes given by the Lincolnshire Curly-Coated Pig Breeders' Association.

<sup>3</sup> Champion Prize of £5 5s. given by the Lincolnshire Curly-Coated Pig Breeders' Association for the best Sow in Classes 386 and 387.

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3526 II. (55).—**FARDBRIDGE E. BOWSER**, Wigtoft, Boston, for Midville Lass 1st, 2nd and 3rd, born Jan. 22, bred by F. J. Campbell, Skipton, Boston, Lincs; *s.* Burton Lass 4185, *d.* Midville Beauty 23rd 11618 by Curly Marchion 3971.

3527 B. N.—**GEORGE FARRIN**, Tolthorpe House, Deeping St. Nicholas, Spalding, for Deeping Countess 1st, 2nd, and 3rd. *H. C.*—3528.

**Cumberlands.<sup>1</sup>**

**Class 389.—Cumberland Boars, farrowed in or before 1919.** [3 entries.]

3530 I. (510).—**JOHN HENRY TOPPIN**, Musgrave Hall, Skelton, Penrith, for Parton Height 1424, born Feb. 24, 1919, bred by G. Gregson, Parton, Wigton, Cumberland; *s.* Tristram Shandy 429, *d.* Lady Betty 2nd 870 by Riga 62.

3529 II. (58).—**TON CROPPER**, 8, John Ashworth Street, Hamer, Rochdale, for Cashier 673, born Jan. 26, 1919, bred by William Draper, Bradley Hall, Ecclesdon, Chorley; *s.* Hard Cash 26, *d.* Bradley Queen 473.

3531 III. (58).—**WILLIAM WHITE**, Prestwick Hall, Ponteland, Newcastle-on-Tyne, for Sir Bronis 737, born March 10, 1918, bred by William Parkin-Moore, Whitehall, Meolsgate, Carlisle; *s.* Lockhill King 46, *d.* Lady Bronte 254 by King George 33.

**Class 390.—Cumberland Boars, farrowed in 1920.** [2 entries.]

3533 I. (510).—**JOHN STEEL**, M.R.C.V.S., Southley, Wigton, for Ember Day, born Sept. 18; *s.* Lord Rowes 1308, *d.* Flash Girl 607 by Oughtibridge 57.

**Class 391.—Cumberland Boars, farrowed in 1921.** [3 entries.]

3536 I. (510).—**JOHN STEEL**, M.R.C.V.S., Southley, Wigton, for Carry-On, born Jan. 4; *s.* Royal 1524, *d.* Concert 1600 by His Nibs 696.

3535 II. (55).—**HUGH B. SIMPSON**, Bank Barn Farm, Wardle, Rochdale, for Wardle Swell, born Jan. 4; *s.* Excelsior 1202, *d.* Bradley Maud 472.

**Class 392.—Cumberland Breeding Sows, farrowed in or before 1919.** [7 entries.]

3542 I. (510).—**JOHN STEEL**, M.R.C.V.S., Southley, Wigton, for Jo 1613, born May 1, 1919, bred by John 1613, *s.* Tristram Shandy 429, *d.* Hambleton 600 by Caleb's Type 12.

3543 II. (58).—**JOHN HENRY TOPPIN**, Musgrave Hall, Skelton, Penrith, for Skelton Mine 1635, born Feb. 4, 1919, farrowed Jan. 18, bred by Joseph Carr, Mansion House, Kirkbride; *s.* Lord Rothes 702, *d.* Jenny of the Mansion House 104 by Longthwaite Jock.

3540 III. (53).—**HUGH B. SIMPSON**, Bank Barn Farm, Wardle, Rochdale, for Wardle Empress 1589, born Aug. 22, 1918, farrowed April 3; *s.* Hard Cash 26, *d.* Bradley Maud 472.

3538 R. N.—**SIR J. ANDERSON**, Br. Dykehead, Blackford, Carlisle, for Nancy of Barnett Rigg, *H. C.*—3537.

**Class 393.—Cumberland Sows, farrowed in 1920.** [5 entries.]

3546 I. (510).—**JOHN STEEL**, M.R.C.V.S., Southley, Wigton, for Southley Bloom 2892, born Jan. 5; *s.* Tristram Shandy 429, *d.* Handsome 600 by Caleb's Type 12.

3547 II. (55).—**JOHN STEEL**, M.R.C.V.S., for Southley White, *Bd* 2894, born Jan. 5; *s.* Tristram Shandy 429, *d.* Handsome 600 by Caleb's Type 12.

3544 III. (43).—**SIR J. ANDERSON**, Br. Dykehead, Blackford, Carlisle, for Dykehead Mary 1897, born March 17; *s.* Riga Prince 721, *d.* Nancy of Barnett Rigg 1406 by Waver Lad 433.

**Class 394.—Three Cumberland Sows, farrowed in 1921.** [3 entries.]

3549 I. (510).—**JOHN S. JORDAN**, Bowstone, Kendal, for sows, born Jan. 26 and Feb. 4; *s.* Armistice 1177, *d.* Bowstone Wonder 1465 by Barcrose Exchange 660 and Bowstone Peggy 1463 by Red Hall Type 717.

3551 II. (58).—**JOHN HENRY TOPPIN**, Musgrave Hall, Skelton, Penrith, for sows, born Feb. 4; *s.* Longthwaite Footstep 1805, *d.* Longburgh Queen 2552 by Prince Thomas of Aikton House 409.

3550 R. N.—**JOHN STEEL**, M.R.C.V.S., Southley, Wigton.

**Wessex Saddlebacks.**

**Class 395.—Wessex Saddleback Boars, farrowed in or before 1919.** [2 entries.]

3553 I. (510 & Champion).—**STANLEY WHITE**, Offley Grange, Hitchin, for Norman King Ofa 219, born Nov. 2, 1919, bred by Washington Singer, Norman Court, Salisbury; *s.* Norman Hero 27, *d.* Norman Empress 45.

3552 II. (55).—**LORD CHARLES BENTINICK**, Monk's Tower, Lincoln, for Melchet King Maker 154, born Nov. 26, 1919, bred by Sir Alfred Mond, Bt., Melchet Court, Romsey, Hants; *s.* Caer King Maker 9, *d.* Melchet King 7 by Melchet King 1.

<sup>1</sup> £42 towards these Prizes were given by the Cumberland Pig Breeders' Association.

\* Silver Challenge Cup, given by the Wessex Saddleback Pig Society for the best Boar or Sow in Classes 395-399.

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*Class 396.—Wessex Saddleback Boars, farrowed in 1920.<sup>1</sup> [8 entries.]*

3556 I. (£10.)—MALDEN-OAKLEY PIG HERD CO., LTD., Polhampton, Overton, Hants, for Oakley Beastly 217, born Jan. 23, bred by V. Hacker, Sherfield English, Romsey; *s.* Cattistock Norman 5, *d.* Sherfield Sister Susie 40 by Melchet Cooper 3.  
3561 II. (£5.)—SIR GEORGE W. WATSON, BT., Sulhamstead House, Reading, for Ashe Hero 2nd 420, born Aug. 6, bred by T. L. Martin, Ashe Warren, Basingstoke; *s.* Caer Augustus Smodgrass 228, *d.* Norman Node 318 by Norman Hero 27.  
H. C.—3559. C.—3558.

*Class 397.—Wessex Saddleback Boars, farrowed in 1921. [10 entries.]*

3566 I. (£10.)—THOMAS LORRIMER MARTIN, Ashe Warren House, Overton, Hants, for Ashe Mac 2nd, born Feb. 2; *s.* Holbury Lancer 190, *d.* Ashe Mercury 243 by Melchet Cooper 2.  
3568 II. (£5.)—THOMAS LORRIMER MARTIN, for Ashe Plant 2nd 650, born Jan. 29; *s.* Ashe Plant 72, *d.* Caer Girafe 438 by Caer King Maker 9.  
H. C.—3563. C.—3567.

*Class 398.—Wessex Saddleback Breeding Sows, farrowed in or before 1919. [4 entries.]*

3575 I. (£10, & R. M. for Champion<sup>2</sup>)—THE RIGHT HON. SIR ALFRED MOND, BT., Melchet Court, Romsey, Hants, for Norman Nitrate 321, born March 23, 1919, farrowed Jan. 12, bred by W. M. G. Singer, Norman Court, Salisbury; *s.* Norman Hero 27, *d.* Norman Empress 45.  
3573 II. (£5.)—THOMAS LORRIMER MARTIN, Ashe Warren House, Overton, Hants, for Norman Nell 322, born March, 1910, farrowed Feb. 15, bred by G. R. Southwell, Holbury Farm, Lockerley, Romsey, Hants; *s.* Norman Hero 27, *d.* Holbury Susie 101.  
H. C.—3572.

*Class 399.—Wessex Saddleback Sows, farrowed in 1920.<sup>1</sup> [5 entries.]*

3578 I. (£10.)—THE RIGHT HON. SIR ALFRED MOND, BT., Melchet Court, Romsey, for Melchet Nitrate 2nd 1209, born Jan. 9; *s.* Cattistock Norman 6, *d.* Norman Nitrate 321 by Norman Hero 27.  
3577 II. (£5.)—THOMAS LORRIMER MARTIN, Ashe Warren House, Overton, for Norman Owl 835, born March 29, bred by W. M. G. Singer, Norman Court, Salisbury; *s.* Norman Hero 27, *d.* Norman Queen 44.  
H. C.—3579. C.—3580.

*Class 400.—Three Wessex Saddleback Sows, farrowed in 1921. [3 entries.]*

3582 I. (£10.)—THOMAS LORRIMER MARTIN, Ashe Warren House, Overton, Hants, for Ashe Moby 400, Ashes Mond 5th, Ashe Radish 1st, born Jan. 18 and Jan. 20; *s.* Cattistock Norman 6, *d.* Ashe Mercury 243 and Norman Narcissus 319 by Norman Hero 27.  
3583 II. (£5.)—SIR W. GEORGE WATSON, BT., Sulhamstead House, Reading, for Kennet Dolly 10th, 11th and 12th, born Jan. 6; *s.* Eastington Simba 127, *d.* Kennet Dolly 1st 469 by Cattistock Norman 6.  
H. C.—3591.

**Essex.**

*Class 401.—Essex Boars, farrowed in or before 1919. [1 entry.]*

3584 I. (£10.)—R. BROWNING SMITH, The Elms, Great Tey, Kelvedon, for Brock Masterpiece 1818, born Dec. 27, 1919; *s.* Church End Champion 304, *d.* Church End Beauty 268.

*Class 402.—Essex Boars, farrowed in 1920.<sup>3</sup> [7 entries.]*

3590 I. (£10, & R. N. for Champion<sup>4</sup>)—G. & R. KEMESLEY, Barling House, Great Wakering, Essex, for Chelmsford Boar, born Jan. 8, bred by E. H. Sikes, Fyerring Grange, Ingateshorne; *s.* Barnston Claudius 7, *d.* Peace Candy Tut 502 by Peace Adam 81.  
3588 II. (£5.)—CHARLES COUSINS, Stisted, Braintree, for Peace Daniel 1054, born Jan. 8; *s.* Peace Benjamin 83, *d.* Peace Coquette 336.  
3591 R. N.—H. B. TURNER, Barnston Hall, Dunmow, Essex, for Barnston Claudius 6th.  
H. C.—3589. C.—3585.

*Class 403.—Essex Boars, farrowed in 1921. [9 entries.]*

3593 I. (£10.)—A. J. COUSINS, Cressing Lodge, Braintree, for boar, born Jan. 9; *s.* Westfield Beau, *d.* Cressing Duchess by Laguna Champion 55.  
3594 I. (£5.)—CHARLES COUSINS, Stisted, Braintree, for boar, born Jan. 5; *s.* Brook Masterpiece 1013, *d.* Peace Coquette 336.  
3595 II. (£5.)—R. BROWNING SMITH, The Elms, Great Tey, Kelvedon, for Brock Masterpiece 3rd.  
H. C.—3598. C.—3595, 3590.

<sup>1</sup> Prizes given by the Wessex Saddleback Pig Society.

<sup>2</sup> Silver Challenge Cup, given by the Wessex Saddleback Pig Society for the best Boar or Sow in Classes 395-399.

<sup>3</sup> Prizes given by the Essex Pig Society.

<sup>4</sup> Champion Cup given by the Essex Pig Society for the best Boar or Sow in Classes 401-405.

**Class 404.**—*Essex Breeding Sows, farrowed in or before 1919.* [3 entries.]  
 3602 I. (f10, & Champion,<sup>1</sup>)—A. T. GREENSLADE, Little Walden Park, Saffron Walden, for *Walden Treasure* 1378, born March 28, 1919, farrowed March 6, bred by Thomas Bray, *Fermeaux Pelham*, Herts.  
 3601 II. (f5)—A. T. COUSINS, Cressing Lodge, Braintree, for *Cressing Diana* 240, born July, 1918, farrowed Jan. 12, bred by H. Swarden, Stocking Pelham Hall, Bishops Stortford.

**Class 405.**—*Essex Sows, farrowed in 1920.* [2 entries.]  
 3604 I. (f10)—A. T. GREENSLADE, Little Walden Park, Saffron Walden, for *Breeds Bridget* 1548, born July 8, bred by Edward Pyne, South House, Great Waltham; s. Humphrey Roger 224, d. *Breeds Black Bess* 226.

**Class 406.**—*Three Essex Sows, farrowed in 1921.* [8 entries.]  
 3612 I. (f10)—E. H. SIKES, Fryerning Grange, Ingateshorne, Essex, for sows, born Jan. 9, 20 1921; s. *Baroness Claudio* 7, d. *Autlands Bridget* 648, *Flower Fryerning* and *Rootes* of *Fryerning*.  
 3610 II. (f8)—W. H. & H. MARRIAGE & SONS, Chelmer Mills, Chelmsford, for sows, born Jan. 14; s. *Parsonage Premier*, d. *Chelmer Hopetul* by *Chelmer Lord Warwick* 23.  
 3606 R. N.—ERNEST BARRACLOUGH, Wickham Place, Witham, Essex, for *Ramsey Pansy*, *Ramsey Pancake*, *Ramsey Patience*.  
 H. C.—3807. C.—3608.

## POULTRY.

By "Cock," "Hen," "Gander," and "Goose," are meant birds hatched previous to January 1, 1921; and by "Cockerel" and "Pullet" are meant birds hatched in 1921.

The Prizes in each Class are as follows: First Prize, 20s. Second Prize, 20s.

Third Prize, 10s.

Special Prizes were given in the Poultry Classes by the following Clubs:—Dorking, Sussex. White Wyandotte, Columbian Wyandotte, Buff Orpington, White Orpington, Black Orpington, British Rhode Island Red, Blue Leghorn, Russian Orloff, Sicilian Buttercup, Barred Plymouth Rock, Buff Plymouth Rock, Indian Runner Duck, and Indian Game.

**Class 407.**—*Silver Grey Dorking Cocks.* [4 entries.]  
 1 I. & Special.—CHARLES AITKENHEAD, Carr House Farm, New Seaham, co. Durham.  
 4 II. & R. N. for Special.—ARTHUR C. MAJOR, Ditton, Langley, Bucks.  
 3 III.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
 H. C.—2.

**Class 408.**—*Silver Grey Dorking Hens.* [4 entries.]  
 6 I. & Special.—ALEXANDER MANN, Broomhill Road, Keith.  
 5 II. & R. N. for Special, & 8 III.—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

**Class 409.**—*Dark Coloured Dorking Cock.* [4 entries.]  
 11 I. & Special.—CHARLES AITKENHEAD, Carr House Farm, New Seaham.  
 10 II. & R. N. for Special, & 14 III.—GEORGE H. PROCTER, Flass House, Durham.  
 9 III.—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

**Class 410.**—*Dark Coloured Dorking Hens.* [4 entries.]  
 13 I. & Special.—CHARLES AITKENHEAD, Carr House Farm, New Seaham.  
 16 II. & R. N. for Special, & 14 III.—ARTHUR C. MAJOR, Ditton, Langley, Bucks.  
 15 R. N.—GEORGE H. PROCTER, Flass House, Durham.

**Class 411.**—*Langshan Cocks or Cockerels.* [4 entries.]  
 20 I.—JOSEPH HOWE, Grosvenor Hotel, Church Street, Blackpool.  
 19 II.—R. TWIGG, Clipsham Farm, Bradbourn, Ashbourne.

**Class 412.**—*Langshan Hens or Pullets.* [6 entries.]  
 22 I.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 23 II.—JOHN ANTHONY, Springfield House, Brighouse, Yorks.  
 25 III. & 22 R. N.—JOSEPH HOWE, Grosvenor Hotel, Church Street, Blackpool.  
 H. C.—21, 24.

**Class 413.**—*Croad Langshan Cocks or Cockerels.* [10 entries.]  
 30 I.—EDWARD COCKER, 101, Towngate, Leyland, Lancs.  
 28 II.—R. LEWIS, Tyneblyn Farm, Dinas, Rhondda.  
 27 III.—E. HAYNES, 88, Radbourne Street, Derby.  
 34 R. N.—C. H. JONES, Longfield, Tenbury.  
 H. C.—29, 35. C.—31, 32, 38.

<sup>1</sup> Champion Cup given by the Essex Pig Society for the best Essex Boar or Sow in Classes 401-405.

<sup>2</sup> Prizes given by the Essex Pig Society.

**Class 414.—Croad Langshan Hens or Pullets.** [8 entries.]

40 I.—H. COLLIER, The Gardens, Rolleston Hall, Burton-on-Trent.  
 39 II.—A. BIRTVILLE, 86, Chester Road, Northwich.  
 38 III.—EDWARD COCKER, 101, Towngate, Leyland, Lancs.  
 44 R. N.—W. H. MITCHELL, Elmdean, Kenilworth.  
 H. C.—43. C.—42.

**Class 415.—Brahma Cocks or Cockerels.** [4 entries.]

47 I.—M. EWRANK, Cawton, Horningham, Malton.  
 46 II.—FRED S. B. SHEPPARD, 60, Soundwell Road, Staple Hill, Bristol.  
 48 III.—R. ANTHONY, Home Farm, Buxton, Chorley.  
 45 R. R.—ANDREW WARWICK, 1, St. Ann's Hill, Carlisle.

**Class 416.—Brahma Hens or Pullets.** [3 entries.]

51 I.—R. ANTHONY, Home Farm, Buxton, Chorley.  
 49 II.—B. P. WHEADON, Limister, Somerset.  
 50 III.—ANDREW WARWICK, 1, St. Ann's Hill, Carlisle.

**Class 417.—Cochin Cocks or Cockerels.** [3 entries.]

52 I. & 54 II.—GEORGE H. PROCTER, Flass House, Durham.  
 53 III.—GEORGE LANE, 3, Bartlett's Road, Bedminster, Bristol.

**Class 418.—Cochin Hens or Pullets.** [2 entries.]

55 I. & 56 II.—GEORGE H. PROCTER, Flass House, Durham.

**Class 419.—Red Sussex Cocks.** [10 entries.]

63 I. & 66 II.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 60 III.—MRS. M. A. GRANT, Westlands, Burstow, Horley.  
 64 R. N.—J. S. HEPBURN, Astley, Nuneaton.  
 H. C.—57. C.—65.

**Class 420.—Red Sussex Hens.** [8 entries.]

67 I. & SpeciaL & 70 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 73 II.—J. S. HEPBURN, Astley, Nuneaton.  
 71 III.—GODFREY W. H. ELLIS, The Manor House, Lingfield, Surrey.  
 H. C.—72. C.—68.

**Class 421.—Red Sussex Cockerels.** [4 entries.]

75 I. & R. N. for SpeciaL & 77 II.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 78 III. & 76 R. N.—C. & E. STEPHENSON, LTD., Burton House, Stafford.

**Class 422.—Red Sussex Pullets.** [5 entries.]

79 I. & 82 III.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 81 II.—MRS. M. A. GRANT, Westlands, Burstow, Horley.  
 80 R. N.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 H. C.—38.

**Class 423.—Light Sussex Cocks.** [15 entries.]

84 I.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 92 II.—J. S. HEPBURN, Astley, Nuneaton.  
 95 III.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 88 R. N.—MRS. M. A. GRANT, Westlands, Burstow, Horley.  
 H. C.—96. C.—98.

**Class 424.—Light Sussex Hens.** [21 entries.]

100 I. & SpeciaL—HARRISON & BANKS, Pound Farm, Wood Street Green, Guildford.  
 105 II.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 107 III.—GODFREY W. H. ELLIS, The Manor House, Lingfield, Surrey.  
 104 R. N.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 H. C.—108. C.—103.

**Class 425.—Light Sussex Cockerels.** [29 entries.]

143 I.—CAPT. E. DUCKWORTH, Tetlow Fold Farm, Godley, Cheshire.  
 120 II.—R. M. ROBERTS, Wanbarrow Poultry Farm, Hurstpierpoint.  
 126 III.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 129 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 H. C.—131. C.—137.

**Class 426.—Light Sussex Pullets.** [27 entries.]

155 I. & R. N. for SpeciaL & 159 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 158 II.—JAMES RUSSEL, Mapleton, Edenbridge.  
 166 III.—HARRISON & BANKS, Pound Farm, Wood Street Green, Guildford.  
 H. C.—169. C.—165.

**Class 427.—Speckled Sussex Cocks.** [11 entries.]

176 I.—SIR JAMES KNOTT, BT., Close House Home Farm, Wylam-on-Tyne.  
 180 II.—CAPT. T. M. WHITTAKER, Homestall Poultry Farm, Porthendyndreath, N. Wales.  
 182 III. & 184 R. N.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
 H. C.—183 C.—186

**Class 428.—Speckled Sussex Hens.** [10 entries.]

188 I. & R. N. for Special—JAMES RUSSEL, Mapleton, Edenbridge.  
 193 II.—DR. E. S. JACKSON, Cartforth.  
 190 III. & 194 R. N.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 H. C.—195 C.—187

**Class 429.—Speckled Sussex Cockerels.** [5 entries.]

197 I.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 198 II.—JAMES RUSSEL, Mapleton, Edenbridge.  
 200 III.—SIR JAMES KNOTT, BT., Close House Home Farm, Wylam-on-Tyne.

**Class 430.—Speckled Sussex Pullets.** [10 entries.]

211 I. & Special—HARRISON & BANKS, Found Farm, Wood Street Green, Guildford.  
 203 II.—JAMES RUSSEL, Mapleton, Edenbridge.  
 206 III.—DR. E. S. JACKSON, Cartforth.  
 209 R. N.—C. & E. STEPHENSON, LTD., Burton House, Stafford.  
 H. C.—208 C.—205

**Class 431.—Brown Sussex Cocks.** [5 entries.]

214 I. & Special—MRS. M. A. GRANT, Westlands, Burstow, Horley.  
 213 II.—J. S. HEPBURN, Astley, Nunecan.  
 215 III.—F. ASHBURNHAM, Guestling House, Guestling, Hastings.  
 212 R. N.—JAMES RUSSEL, Mapleton, Edenbridge.

**Class 432.—Brown Sussex Hens.** [4 entries.]

217 I. & R. N. for Special, & 220 II.—JAMES RUSSEL, Mapleton, Edenbridge.  
 218 III.—J. S. HEPBURN, Astley, Nunecan.

**Class 433.—Brown Sussex Cockerels.** [3 entries.]

222 I.—F. ASHBURNHAM, Guestling House, Guestling, Hastings.  
 221 II.—JAMES RUSSEL, Mapleton, Edenbridge.

**Class 434.—Brown Sussex Pullets.** [4 entries.]

225 I.—MRS. M. A. GRANT, Westlands, Burstow, Horley.  
 227 II. & 224 R. N.—JAMES RUSSEL, Mapleton, Edenbridge.  
 226 III.—J. S. HEPBURN, Astley, Nunecan.

**Class 435.—Campine Cocks or Cockerels.** [2 entries.]

220 I.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 228 II.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.

**Class 436.—Campine Hens or Pullets.** [6 entries.]

235 I. & 233 R. N.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 230 II.—F. G. HUTCH, Alderwasley Hall, Whatstandwell, Derbyshire.  
 231 III.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 H. C.—232

**Class 437.—White Wyandotte Cocks.** [17 entries.]

236 I.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
 250 II.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 240 III.—HUGH GUNN, Castle Villa Poultry Farm, Gloucester.  
 243 R. N.—ALFRED DODD, The Grove, Shavington, Crewe.  
 H. C.—238, 239, 242, 246, 247, 249, 252.

**Class 438.—White Wyandotte Hens.** [14 entries.]

257 I.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
 285 II.—CAPT. E. DUCKWORTH, Tetlow Fold Farm, Godley, Cheshire.  
 286 III.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 259 R. N.—MRS. A. J. MOORE, Eight Oaks, Knutsford.  
 H. C.—253, 255 C.—260

**Class 439.—White Wyandotte Cockerels.** [23 entries.]

271 I. & Special—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
 275 II. & 267 R. N.—JOHN WHARFON, Honeycott Farm, Hawes, Yorks.  
 282 III.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 H. C.—272, 274, 277, 284, 288.

**Class 440.—White Wyandotte Pullets.** [18 entries.]

290 I. & Special—JOHN WHARFON, Honeycott Farm, Hawes, Yorks.  
 297 III.—J. A. MORRISON, D.S.O., Woodhall Spa.  
 305 III.—R. ANTHONY, Home Farm, Euxton, Chorley.

292 R. N.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.

H. C.—291, 294, 296, 298, 303, 304, 305.

Class 441.—*Black Wyandotte Cocks or Cockerels.* [10 entries.]

308 I.—ALFRED BIRCH, Edge Farm, Sefton, via Seaford, Liverpool.  
 309 II.—J. A. G. EMMET, Moreton Paddox Poultry Farm, Moreton Morrell, Warwick.  
 315 III.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
 318 R. M.—R. HARGREAVES, Banks Farm, Whalley, Lancs.  
 H. C.—311, 314, 316, 317.

Class 442.—*Black Wyandotte Hens or Pullets.* [5 entries.]

322 I.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
 320 II.—MAJOR K. WILLET, The Romany, Southwick, Sussex.  
 321 III.—G. HARDY, Pickering Lodge, Timperley, Cheshire.  
 318 R. M.—R. HARGREAVES, Banks Farm, Whalley, Lancs.  
 H. C.—319.

Class 443.—*Gold or Silver Laced Wyandotte Cocks or Cockerels.* [8 entries.]

327 I.—PERKINS & MURDEN, Forest Villa, Bulwell, Notts.  
 324 II.—J. G. MORTEN, Penrich, Derby.  
 323 III.—THOMAS LOCKWOOD, The Woodlands, Patleay Bridge.  
 324 R. M.—CAMPION & GLENNY, Billhurst Poultry Farm, Wood Street Green, Guildford.  
 H. C.—325.

Class 444.—*Gold or Silver Laced Wyandotte Hens or Pullets.* [10 entries.]

335 I.—GEORGE HARDY, Pickering Lodge, Timperley.  
 331 II.—THOMAS LOCKWOOD, The Woodlands, Patleay Bridge.  
 334 III.—PERKINS & MURDEN, Forest Villa, Bulwell, Notts.  
 337 R. M.—H. H. HOLMES, Parkfield, Ripley, Derbyshire.  
 H. C.—340.  
 C.—333, 339.

Class 445.—*Blue Wyandotte Cocks or Cockerels.* [6 entries.]

341 I.—MRS. W. HOLDSWORTH, Bernard House, Newbridge Crescent, Wolverhampton.  
 343 II.—DR. E. S. JACKSON, Camforth.  
 346 III.—R. M.—W. H. FAIRHURST, Ingle Knott, Moss Lane, Cadishead, Manchester.  
 H. C.—342.  
 C.—345.

Class 446.—*Blue Wyandotte Hens or Pullets.* [5 entries.]

347 I. & 320 II.—W. H. FAIRHURST, Ingle Knott, Moss Lane, Cadishead, Manchester.  
 348 III.—ISAAC SPENCER, 50, Park Road, Eland.  
 351 R. M.—MRS. W. HOLDSWORTH, Bernard House, Newbridge Crescent, Wolverhampton.  
 H. C.—349.

Class 447.—*Columbian Wyandotte Cocks.* [3 entries.]

352 I. & R. M. for Special, & 354 III.—L. H. WACE, Kingsland Poultry Farm, Beaminster.  
 353 III.—MISS IIVI KING, Pendricks Farm, Stidcote, Tytherington, Fallowfield.

Class 448.—*Columbian Wyandotte Hens.* [4 entries.]

355 I. & R. M. for Special.—L. H. WACE, Kingsland Poultry Farm, Beaminster.  
 357 II.—GEORGE HARDY, Pickering Lodge, Timperley.  
 356 III.—J. A. G. EMMET, Moreton Paddox Poultry Farm, Moreton Morrell, Warwick.  
 H. C.—363.

Class 449.—*Columbian Wyandotte Cockerels.* [5 entries.]

361 I. & Special, & 359 R. M.—L. H. WACE, Kingsland Poultry Farm, Beaminster.  
 362 II.—W. Y. JEEVES, Armagh House, Lynn.  
 368 III.—GEORGE HARDY, Pickering Lodge, Timperley.  
 H. C.—368.  
 C.—356.

Class 450.—*Columbian Wyandotte Pullets.* [7 entries.]

369 I. & Special.—W. Y. JEEVES, Armagh House, Lynn.  
 370 II.—MRS. T. RATT, West Hill Farm, Keyborday.  
 367 III.—GEORGE HARDY, Pickering Lodge, Timperley.  
 364 R. M.—L. H. WACE, Kingsland Poultry Farm, Beaminster.  
 H. C.—368.  
 C.—356.

Class 451.—*Wyandotte Cocks or Cockerels, any other variety.* [7 entries.]

377 I. & 373 R. M.—J. G. MORTEN, Penrich, Derby.  
 374 II.—WILLIAM LEAK, Howard Cottage, Wetheral, Carlisle.  
 372 III.—J. MELLOR, Tunshad, Wormhill, Buxton.  
 H. C.—371, 376.  
 C.—375.

Class 452.—*Wyandotte Hens or Pullets, any other variety.* [3 entries.]

380 I.—J. A. BOARDLEY, Shire Road, Lancaster.  
 378 II.—JOHN HODGE, 174, Colswood Road, St. John's Lane, Bedminster, Bristol.  
 379 III.—GEORGE HARDY, Pickering Lodge, Timperley.

Class 453.—*Buff Orpington Cocks.* [14 entries.]

383 I. & Special, & 389 III.—J. BROOKS, Myrtle Poultry Farm, Irlam, Manchester.  
 390 II.—MRS. M. J. WILFRETON, Burrow Farm, Scotforth, Lancaster.  
 387 R. M.—CHARLES KEETLEY, Easthorpe Cottage, Lowdham.  
 H. C.—386, 388, 391.  
 C.—381, 382, 384, 393.

**Class 454.—*Buff Orpington Hens.* [3 entries.]**

396 I.—M. ROGERS, Wanbarrow Poultry Farm, Hurstpierpoint.  
 397 II.—J. BROOKS, Mythe Poultry Farm, Irwell, Manchester.  
 398 III.—MRS. M. J. WILKINSON, Burrow Farm, Scotforth, Lancaster.

**Class 455.—*Buff Orpington Cockerels.* [8 entries.]**

401 I.—H. & A. DERBYSHIRE, Oak Cottage, Tenement Lane, Cheadle Hulme, Cheshire.  
 402 II.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 403 III.—W. J. TILDING, Bowens, Penshurst, Kent.  
 400 R. N.—J. M. ROGERS, Wanbarrow Poultry Farm, Hurstpierpoint.  
 H. C.—398, 403.

**Class 456.—*Buff Orpington Pullets.* [7 entries.]**

408 I.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 407 II.—H. & A. DERBYSHIRE, Oak Cottage, Tenement Lane, Cheadle Hulme, Cheshire.  
 409 III.—W. J. GOLING, Bowens, Penshurst, Kent.  
 412 R. N.—F. M. ROGERS, Wanbarrow Poultry Farm, Hurstpierpoint.  
 H. C.—406, 410. C.—411.

**Class 457.—*White Orpington Cocks.* [4 entries.]**

416 I. & R. N. for Special.—GEORGE H. PROCTER, Flass House, Durham.  
 415 II.—RUFERT H. DAVIES, Poultry Yards, Netherton, Dudley.  
 414 III.—HAROLD CORRIE, Heath House Farm, Lowfield Heath.

**Class 458.—*White Orpington Hens.* [6 entries.]**

417 I. & Special.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
 419 II. & 422 III.—GEORGE H. PROCTER, Flass House, Durham.  
 420 R. N.—MRS. ARTHUR HOLMES, Halgott Cottage, Moorside, Eccleshill, Bradford.

**Class 459.—*White Orpington Cockerels.* [3 entries.]**

423 I. & Special.—LT.-COL. H. WATTS, O.B.E., Haslington Hall, Crewe.  
 424 II.—W. M. BELL, St. Leonards Poultry Farm, Ringwood.  
 425 III.—GEORGE H. PROCTER, Flass House, Durham.

**Class 460.—*White Orpington Pullets.* [3 entries.]**

426 I. & R. N. for Special.—LT.-COL. H. WATTS, Haslington Hall, Crewe.  
 428 II.—GEORGE H. PROCTER, Flass House, Durham.

**Class 461.—*Black Orpington Cocks.* [17 entries.]**

441 I. & Special.—MISS N. SHANKS, Prospect Villa, Stetchworth, Newmarket.  
 429 II.—DR. E. S. JACKSON, Carnforth.  
 434 III. & 437 R. N.—F. SWINDELLS, Crosby Stud Farm, Buglawton.  
 H. C.—431.

**Class 462.—*Black Orpington Hens.* [12 entries.]**

448 I. & 464 III.—JOHNS BROS., Penwins, Helland, Bodmin.  
 446 II.—WILLIAM H. COOK, LTD., Orpington, Kent.  
 450 III. & 452 R. N.—F. SWINDELLS, Crosby Stud Farm, Buglawton.  
 H. C.—452. C.—454.

**Class 463.—*Black Orpington Cockerels.* [12 entries.]**

469 I. & 464 III.—JOHNS BROS., Penwins, Helland, Bodmin.  
 466 II.—WILLIAM H. COOK, LTD., Orpington, Kent.  
 452 R. N.—C. H. DRYLAND, JUN., Ashwood, Cecil Street, Littleborough.  
 H. C.—463. C.—461.

**Class 464.—*Black Orpington Pullets.* [9 entries.]**

470 I.—W. M. BELL, St. Leonards Poultry Farm, Ringwood.  
 476 II.—JOHNS BROS., Penwins, Helland, Bodmin.  
 471 III.—LT.-COL. H. WATTS, Haslington Hall, Crewe.  
 477 R. N.—R. ANTHONY, Home Farm, Buxton, Chorley.  
 H. C.—472. C.—474.

**Class 465.—*Blue Orpington Cocks or Cockerels.* [10 entries.]**

482 I. & 486 III.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 483 II.—MRS. ARTHUR LATHAM, Model Poultry Farm, Frimley Green.  
 484 R. N.—WILLIAM H. COOK, LTD., Orpington, Kent.  
 H. C.—479. C.—485.

**Class 466.—*Blue Orpington Hens or Pullets.* [9 entries.]**

491 I.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 489 II. & 493 III.—WILLIAM H. COOK, LTD., Orpington, Kent.  
 497 R. N.—MRS. C. J. PHILLIPS, Old Dalby Hall, Melton Mowbray.  
 H. C.—496. C.—495.

**Class 467.—British Rhode Island Red Single Comb Cocks.** [25 entries.]

510 I. & Special.—MISS K. PHILLY, Theydon Place, Epping.  
 505 II. & R. N. for Special.—JOE ENTWISTLE, Sandside, Chatsworth Road, Ainsdale, Southport.  
 512 III.—H. J. LEWIS, Field House, Shardlow, Derby.  
 498 R. N.—MRS. A. J. MOORE, Eight Oaks, Knutsford.  
 H. C.—502, 522. C.—515, 517, 521.

**Class 468.—British Rhode Island Red Single Comb Hens.** [17 entries.]

534 I. & R. N. for Special.—JOE ENTWISTLE, Sandside, Chatsworth Road, Ainsdale, Southport.  
 533 II.—MRS. A. J. MOORE, Eight Oaks, Knutsford.  
 529 III.—S. BRANDRETH, Bradford Court, Taunton.  
 528 R. N.—H. J. LEWIS, Field House, Shardlow, Derby.  
 H. C.—526, 536. C.—527, 533.

**Class 469.—British Rhode Island Red Single Comb Cockerels.** [22 entries.]

548 I.—H. J. LEWIS, Field House, Shardlow, Derby.  
 551 II. & 547 III.—MRS. A. J. MOORE, Eight Oaks, Knutsford.  
 540 R. N.—MRS. R. C. S. WADE, The Bungalow, Victoria Avenue, Shipley, Yorks.  
 H. C.—541, 543. C.—544, 553.

**Class 470.—British Rhode Island Red Single Comb Pulletts.** [34 entries.]

578 I. & Special.—WILLIAM ROGERS, Border Farm Stud, Beswall Hills, Cheshire.  
 576 II.—MRS. R. C. S. WADE, The Bungalow, Victoria Avenue, Shipley, Yorks.  
 583 III.—MRS. A. J. MOORE, Eight Oaks, Knutsford.  
 577 R. N.—A. T. BROCKLEHURST, 30, Meadowcroft Road, Palmer's Green, London, N.  
 H. C.—571, 588, 589. C.—563.

**Class 471.—British Rhode Island Red Rose Comb Cocks.** [8 entries.]

508 I.—MARSH & GOODALL, Swanwick, Alfreton.  
 609 II.—H. J. LEWIS, Field House, Shardlow, Derby.  
 607 III.—E. A. HEMINGWAY, Lucombe, Allerton, Taunton.  
 605 R. N.—GEORGE SCOTT, Windmill Poultry Farm, Pudsey, Yorks.

**Class 472.—British Rhode Island Red Rose Comb Hens.** [6 entries.]

608 I.—MARSH & GOODALL, Swanwick, Alfreton.  
 609 II.—H. J. LEWIS, Field House, Shardlow, Derby.  
 607 III.—E. A. HEMINGWAY, Lucombe, Allerton, Taunton.  
 605 R. N.—GEORGE SCOTT, Windmill Poultry Farm, Pudsey, Yorks.

**Class 473.—British Rhode Island Red Rose Comb Cockerels.** [7 entries.]

613 I.—E. A. HEMINGWAY, Lucombe, Allerton, Taunton.  
 612 II.—GEORGE SCOTT, Windmill Poultry Farm, Pudsey, Yorks.

**Class 474.—British Rhode Island Red Rose Comb Pulletts.** [8 entries.]

618 I.—GEORGE SCOTT, Windmill Poultry Farm, Pudsey, Yorks.  
 619 II.—MARSH & GOODALL, Swanwick, Alfreton.  
 620 III.—TOM A. SCOTT & CO., The Trenches, Slough.  
 623 R. N.—JOHN VOYCE, 3, Tolman Avenue, Bebington, Cheshire.

**Class 475.—Frizzles Cocks or Cockerels.** [7 entries.]

626 I., 628 II., & 632 R. N.—SIR CLAUD ALEXANDER, BT., Faygate Wood, Faygate, Sussex.  
 627 III.—MISS HILDA LAURIE, The Westgate House, Canterbury.  
 H. C.—629. C.—630.

**Class 476.—Frizzles Hens or Pulletts.** [6 entries.]

633 I. & 635 II.—SIR CLAUD ALEXANDER, BT., Faygate Wood, Faygate, Sussex.  
 667 III.—MISS HILDA LAURIE, The Westgate House, Canterbury.  
 636 R. N.—MAJOR G. T. WILLIAMS, Tredrea, Perranwell.  
 H. C.—634.

**Class 477.—Old English Game Black-Red Cocks or Cockerels.** [12 entries.]

639 I.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
 650 II.—W. HEATH, Home Farm, Keble Road, Newcastle, Staffs.  
 642 III.—TOM WOODCOCK, Burton Fen, Lincoln.  
 649 R. N.—ARTHUR BROWN, Heighington, co. Durham.  
 H. C.—646, 647. C.—645.

**Class 478.—Old English Game Clay or Wheaten Hens or Pulletts.** [9 entries.]

654 I.—R. S. MARSDEN, Chatburn, Clitheroe.  
 651 II.—A. W. COOKSON, 42, Church Street, Nuneaton.  
 652 III.—TOM WOODCOCK, Burton Fen, Lincoln.  
 653 R. N.—T. H. EGGLESTONE, St. John's Chapel, Wearsdale.  
 H. C.—654, 657, 659. C.—655.

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**Class 479.—Old English Game Cocks or Cockerels, any other colour.** [10 entries.]

685 I.—MELLOR & WILKINSON, Hassocks Prize Poultry Farm, Honley, Huddersfield.  
686 II.—W. HEATH, Home Farm, Keel Road, Newcastle, Staffs.  
688 III.—R. S. MARSDEN, Chathorpe, Clitheroe.  
689 R. N.—JOHN WATSON, Eden Mount, Kendal.  
H. C.—681, 682, 688.      C.—684, 688.

**Class 480.—Old English Game Hens or Pullets, any other colour.** [10 entries.]

670 I.—MISS M. THRELFOLD, Broomcote, Brampton Junction, Carlisle.  
674 II.—J. S. MARSDEN, Chathorpe, Clitheroe.  
677 III.—W. HEATH, Home Farm, Keel Road, Newcastle, Staffs.  
671 R. N.—J. R. CROMPTON, Greenhayes, Banstead, Epsom.  
H. C.—670, 673, 675, 678, 679.      C.—672.

**Class 481.—Indian Game Cocks or Cockerels.** [12 entries.]

687 I. & 691 II.—ALFRED BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.  
689 III.—JAMES S. HEPBURN, Astley, Nuneaton.  
680 R. N.—WILLIAM BRENT, Clampit, Callington, Cornwall.  
H. C.—684.      C.—688.

**Class 482.—Indian Game Hens or Pullets.** [14 entries.]

704 I.—JAMES S. HEPBURN, Astley, Nuneaton.  
693 II.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
698 III.—WILLIAM BRENT, Clampit, Callington, Cornwall.  
702 R. N.—ALFRED BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.  
H. C.—697.      C.—693.

**Class 483.—Minorca Cocks or Cockerels.** [7 entries.]

708 I. & 709 II.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
711 III.—WILLIAM WILSON, 34, Nottingham Road, Kimberley, Notts.  
712 R. N.—H. & A. DERBYSHIRE, Oak Cottage, Tenterden Lane, Cheadle Hulme, Cheshire.  
H. C.—708.      C.—707.

**Class 484.—Minorca Hens or Pullets.** [9 entries.]

713 I. & 716 II.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
721 III.—JOHN SAUNDERS, 116, Napier Street, Sheffield.  
720 R. N.—ALFRED DODD, The Grove, Shavington, Crewe.  
H. C.—715, 717.      C.—714, 719.

**Class 485.—White Leghorn Cocks or Cockerels.** [10 entries.]

722 I. & 724 II.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
730 III.—B. MOSS, Lindow Terrace, Alderley Edge.  
726 R. N.—HERBERT SHORTER, Cottesbrook, Wyld Green, Birmingham.  
H. C.—728.      C.—728.

**Class 486.—White Leghorn Hens or Pullets.** [11 entries.]

732 I. & 741 II.—LORD DEWAR, Homestall Poultry Farm, East Grinstead.  
738 III.—B. MOSS, Lindow Terrace, Alderley Edge.  
737 R. N.—CAPT. E. DUCKWORTH, Fallow Fold Farm, Godley, Cheshire.  
H. C.—734, 736.      C.—735, 742.

**Class 487.—Brown Leghorn Cocks or Cockerels.** [6 entries.]

745 I. & 746 R. N.—JOHN JONES, Poultry Farm, Crymlyn.  
747 II.—R. ANTHONY, Home Farm, Buxton, Chorley.  
743 III.—E. LL. SIMON, Pembrokeshire.  
H. C.—745.      C.—745.

**Class 488.—Brown Leghorn Hens or Pullets.** [4 entries.]

751 I.—FRANCIS & WARDEN, Strawberry Poultry Farm, Edgbaston.  
749 II.—E. DUNSTER, High Gartford Farm, Furley, Chard.  
750 III.—F. G. EDWARDS, 5, West Street, Pembrokeshire.

**Class 489.—Black Leghorn Cocks or Cockerels.** [6 entries.]

754 I. & 757 II.—WALTER HURST, South Terrace, Glossop.  
756 III.—CAPT. CHARLES A. ALLEX, Homegarth, Horley.

**Class 490.—Black Leghorn Hens or Pullets.** [10 entries.]

766 I.—G. WARING, 7, Higher Bibbington, Dovs Holes, Stockport.  
767 II.—E. WHITAKER, Carr's Farm, Hebdon Bridge.  
763 III.—JOHN BOWER, The Bungalow, Peak Forest.  
761 R. N.—WALTER HURST, South Terrace, Glossop.  
H. C.—760.

Class 491.—*Blue Leghorn Cocks or Cockerels.* [7 entries.]

773 L. & R. N. for Special.—C. N. ALEXANDER, Stockwell House, Knaresborough.  
 769 II.—A. T. MITTON, Gravest Farm, Turton, Bolton.  
 775 III.—S. H. GREGORY, Jumble Farm, Glossop.  
 771 R. N.—WATERHOUSE & TOWNSEND, 1A, Lord Street, Glossop.

Class 492.—*Blue Leghorn Hens or Pullets.* [10 entries.]

781 L. & Special.—MITTON BROS., 23, Bolton Road, Turton, Bolton.  
 777 II.—A. T. MITTON, Gravest Farm, Turton, Bolton.  
 783 III.—S. H. GREGORY, Jumble Farm, Glossop.  
 778 R. N.—WATERHOUSE & TOWNSEND, 1A, Lord Street, Glossop.  
 H. C.—782. C.—779.

Class 493.—*Leghorn Cocks or Cockerels, any other colour.* [4 entries.]

789 L.—E. LL. SIMON, Pembroke.  
 788 II.—H. BRAZIER, Ley House, Granborough, Winslow.  
 787 III.—ROGER HELME, Thurnham, near Lancaster.  
 786 R. N.—HARRY FOX, Richmond Poultry Farm, Matlock.

Class 494.—*Leghorn Hens or Pullets, any other colour.* [3 entries.]

791 L.—H. BRAZIER, Ley House, Granborough, Winslow.  
 790 II.—ROGER HELME, Thurnham, near Lancaster.  
 792 III.—E. LL. SIMON, Pembroke.

Class 495.—*Russian Orloff Cocks or Cockerels.* [7 entries.]

798 L. & Special.—HAROLD THORNTON, Rye Croft, Honley, Huddersfield.  
 793 II. & R. N. for Special.—MRS. ARTHUR SHERSTON, Otley Hall, Ipswich.  
 794 III.—D. F. LEWES, Wervill Brook, Rhydlewis, Henllan.  
 790 R. N.—JOHN SUTHERLAND, Rosebery Terrace, Wick.  
 H. C.—795. C.—797.

Class 496.—*Russian Orloff Hens or Pullets.* [6 entries.]

801 I. & 804 II.—DR. J. M. MENZIES, Hawthorlbank, Selkirk.  
 802 III.—HAROLD THORNTON, Rye Croft, Honley, Huddersfield.  
 805 R. N.—PARK HOUSE POULTRY FARM, LTD., Burstow, Surrey.

Class 497.—*Gold or Silver Sicilian Buttercup Cocks or Cockerels.* [13 entries.]

814 L. & Special.—J. W. MARRIOTT, Valley Deane, South Elmall, Pontefract.  
 809 II. & R. N. for Special.—MAGGIE R. STAVRON, Kittles, Bishops Teggeaton, Teignmouth.  
 810 III.—MRS. ARTHUR SHERSTON, Otley Hall, Ipswich.  
 815 R. N.—J. BAILEY, Johnson Lane, Ecclesfield, Sheffield.  
 H. C.—811. C.—814.

Class 498.—*Gold or Silver Sicilian Buttercup Hens or Pullets.* [10 entries.]

825 I. & Special.—MRS. HAROLD THORNTON, Rye Croft, Honley, Huddersfield.  
 822 II. & R. N. for Special, & 827 III.—FRANK E. DERRAM, The Old Hall, Hilton, Derby.  
 826 R. N.—WILLIAM BULTCLIFFE, Blaize Lea, Marsden, Huddersfield.  
 H. C.—819. C.—823.

Class 499.—*Brown Sicilian Buttercup Cocks or Cockerels.* [7 entries.]

832 I. & Special, & 834 R. N.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 833 II. & R. N. for Special.—TOM A. SCOTT & CO., The Trenches, Slough.  
 830 III.—D. F. LEWES, Wervill Brook, Rhydlewis, Henllan.  
 H. C.—831. C.—828.

Class 500.—*Brown Sicilian Buttercup Hens or Pullets.* [7 entries.]

842 I. & Special, & 839 II. & R. N. for Special.—TOM A. SCOTT & CO., The Trenches, Slough.  
 840 III.—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.  
 838 R. N.—D. F. LEWES, Wervill Brook, Rhydlewis, Henllan.  
 H. C.—836.

Class 501.—*Barred Plymouth Rock Cocks.* [8 entries.]

843 L. & Special, 840 II., & 843 III.—DR. E. S. JACKSON, Carnforth.  
 845 R. N.—JOHN TAYLOR, Heath Farm, Tiptree.  
 H. C.—847, 850. C.—849.

Class 502.—*Barred Plymouth Rock Hens.* [7 entries.]

851 I., 854 II., & 856 III.—DR. E. S. JACKSON, Carnforth.  
 852 R. N.—W. H. WILLIAMS, Carnforth.  
 H. C.—853. C.—855.

Class 503.—*Barred Plymouth Rock Cockerels.* [8 entries.]

858 I. & R. N. for Special, 860 II., & 862 III.—DR. E. S. JACKSON, Carnforth.  
 859 R. N.—W. H. WILLIAMS, Carnforth.  
 H. C.—861, 864. C.—863.

Class 504.—*Barred Plymouth Rock Pullet.* [11 entries.]

867 I. & 870 II.—DR. E. S. JACKSON, Carnforth.  
 869 III.—JOHN PENNINGTON, Heswall-on-Dee.  
 876 R. N.—W. R. WILLIAMS, Carnforth.  
 H. C.—864, 874. C.—868, 875.

Class 505.—*Buff Plymouth Rock Cocks or Cockerels.* [10 entries.]

879 I. & R. N. for Special.—DR. E. S. JACKSON, Carnforth.  
 884 II.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 880 III.—BILSDOROUGH & BLAND, Conder Green, Lancaster.  
 875 R. N.—HERBERT SPENSLEY, Oaks Farm, Menston, Leeds.  
 H. C.—885. C.—877, 883.

Class 506.—*Buff Plymouth Rock Hens or Pullets.* [6 entries.]

888 I. & Special.—HERBERT SPENSLEY, Oaks Farm, Menston, Leeds.  
 887 II. & 890 R. N.—DR. E. S. JACKSON, Carnforth.  
 889 III.—BILSDOROUGH & BLAND, Conder Green, Lancaster.  
 H. C.—891.

Class 507.—*Plymouth Rock Cocks or Cockerels, any other colour.* [8 entries.]

900 I.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 904 II.—FRED NORTH, Ainsdale, Southport.  
 895 III.—CAPT. E. DUCKWORTH, Tatlow Fold Farm, Godley, Cheshire.  
 897 R. N.—THOMAS SILDRIDGE, Aggathorpe, Loughborough.  
 H. C.—893. C.—896, 898.

Class 508.—*Plymouth Rock Hens or Pullets, any other colour.* [6 entries.]

901 I.—CAPT. E. DUCKWORTH, Tatlow Fold Farm, Godley, Cheshire.  
 905 II.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 902 III. & 906 R. N.—FRED NORTH, Ainsdale, Southport.  
 H. C.—904.

Class 509.—*Ancona Cocks or Cockerels.* [9 entries.]

907 I. & 910 R. N.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 915 II.—R. W. CARSON, Manor House, Kings Sutton, Banbury.  
 908 III.—MR. & MRS. E. F. HUNT, South Darley, Matlock.  
 H. C.—909, 911, 912. C.—913, 914.

Class 510.—*Ancona Hens or Pullets.* [8 entries.]

916 I. & 918 R. N.—MR. & MRS. E. F. HUNT, South Darley, Matlock.  
 919 II.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 922 III.—R. W. CARSON, Manor House, Kings Sutton, Banbury.  
 H. C.—921, 923. C.—917.

Class 511.—*Utility Poultry. White Wyandotte Cocks or Cockerels.* [6 entries.]

929 I.—RICHARD RODWELL, Walverden Poultry Farm, Nelson.  
 927 II.—T. H. JEFFERSON, Wistaston Cottage, Crewe.  
 925 III.—MRS. D. W. PORRITT, Tor Side, Helmshore, Manchester.  
 926 R. N.—A. BLYTH, Pedigree Poultry Farm, Walkington, Beverley.  
 H. C.—924. C.—928.

Class 512.—*Utility Poultry. White Wyandotte Hens or Pullets.* [16 entries.]

938 I. & 936 R. N.—MRS. D. W. PORRITT, Tor Side, Helmshore, Manchester.  
 945 II.—RICHARD RODWELL, Walverden Poultry Farm, Nelson.  
 930 III.—W. J. HODGSON, Kew Gardens Poultry Farm, Southport.  
 H. C.—935, 940, 944. C.—932, 938, 939, 942.

Class 513.—*Utility Poultry. White Leghorn Cocks or Cockerels.* [3 entries.]

946 I.—A. BLYTH, Pedigree Poultry Farm, Walkington, Beverley.  
 947 III.—W. J. HOARE, Hoare Poultry Farm, Narrow Lane, Foleshill.

Class 514.—*Utility Poultry. White Leghorn Hens or Pullets.* [14 entries.]

950 I.—W. J. HOARE, Hoare Poultry Farm, Narrow Lane, Foleshill.  
 938 II.—FRANK E. DERHAM, The Old Hall, Hilton, Derby.  
 950 III.—A. BLYTH, Pedigree Poultry Farm, Walkington, Beverley.  
 958 R. N.—R. SCOTT MILLER, Clydenuek, Uddington, Glasgow.  
 H. C.—951, 955. C.—956.

Class 515.—*Cocks or Cockerels, any other distinct variety, except Bantams.* [5 entries.]

983 I.—ALFRED BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool. Jubilee Indian Game.  
 984 II.—J. B. HARDCASTLE, Branston, Lincoln. Sicilian Flower Bird.  
 985 III.—R. P. WHRADON, Ilminster. Black Spanish.  
 986 R. N.—HARRY FOX, Richmond Poultry Farm, Matlock. Redcap.

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**Class 516.—Hens or Pullets, any other distinct variety, except Bantams.**

[14 entries.]

970 I.—MRS. JACK EDWARDS, Railway Hotel, Llandilo, Malay.  
980 II.—W. H. BASH, Home Farm, Keele Road, Newcastle, Staffs., Poland.  
971 III.—ALFRED BIRCH, Edge Farm, Sefton, via Seaford, Liverpool. Jubilee Indian Game.  
968 R. M.—FREDERICK SCOTT, Wheat Ing, Hebden Bridge, Hamburgh.  
H. C.—969, 972, 973, 974, 977, 981. C.—975.

**Class 517.—Aylesbury Drakes or Ducks, bred prior to 1921.** [4 entries.]

988 I. & 985 III.—W. R. MITCHELL, Fairholme, Ettrick Bridge, Selkirk.  
982 II.—JAMES LONGSON & SONS, Buxton Road, Chapel-en-le-Frith.

**Class 518.—Aylesbury Drakes or Ducks, bred in 1921.** [2 entries.]

987 I.—JAMES LONGSON & SONS, Buxton Road, Chapel-en-le-Frith.  
986 II.—W. R. MITCHELL, Fairholme, Ettrick Bridge, Selkirk.

**Class 519.—Rouen Drakes or Ducks, bred prior to 1921.** [9 entries.]

993 I.—R. ANTHONY, Hobn Farm, Euxton, Chorley.  
992 II. & 996 R. N.—ALBERT E. BREWEN, Llysnefrthidion, Treffnant.  
985 III.—MAJOR G. J. A. MORRISON, D.S.O., Basildon Park, Reading.  
H. C.—993. C.—990.

**Class 520.—Rouen Drakes or Ducks, bred in 1921.** [6 entries.]

1000 I., 998 II., & 1002 R. N.—F. W. MYHILL, The Red House, Hethel, Norwich.  
997 III.—RALPH ALTY, Buckshaw Hall, Euxton, Chorley.  
H. C.—999. C.—1001.

**Class 521.—White Indian Runner Drakes or Ducks, bred prior to 1921.**

[11 entries.]

1012 I., 1013 II., & 1009 III.—THE REV. JOHN WILSON, Armathwaite, Carlisle.  
1004 R. N.—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.  
H. C.—1010. C.—1011.

**Class 522.—White Indian Runner Drakes or Ducks, bred in 1921.** [9 entries.]

1022 I. & Special, & 1019 III.—THE REV. JOHN WILSON, Armathwaite, Carlisle.  
1020 II. & 1016 R. N.—JAMES JACKSON, Scough Dyke, Calthwaite, Carlisle.  
H. C.—1018. C.—1015.

**Class 523.—Indian Runner Drakes or Ducks, any other colour, bred prior to 1921.** [13 entries.]

1028 I. & Special, 1027 II., & 1081 III.—THE REV. JOHN WILSON, Armathwaite, Carlisle.  
1034 R. N.—T. DOOD, Wath Farm, Silloth.  
H. C.—1024. C.—1065.

**Class 524.—Indian Runner Drakes, any other colour, bred in 1921.** [6 entries.]

1040 I.—WILLIAM WOODMANS, Howard House Farm, Gisland.  
1039 II., 1030 III., & 1041 R. N.—THE REV. JOHN WILSON, Armathwaite, Carlisle.

**Class 525.—Indian Runner Ducks, any other colour, bred in 1921.** [5 entries]

1048 I., 1044 II., & 1042 R. N.—THE REV. JOHN WILSON, Armathwaite, Carlisle.  
1045 III.—ERNEST BULMAN, Brier Hill, Cunwhinton, Carlisle.  
H. C.—1043.

**Class 526.—Drakes or Ducks, any other variety, bred prior to 1921.** [13 entries.]

1049 I.—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.  
1048 II.—JAMES LONGSON & SONS, Buxton Road, Chapel-en-le-Frith.  
1050 III.—ABBOT BROS., Thuxton, Norfolk.  
1052 R. N.—R. SCOTT MILLER, Clydenuek, Uddington, Glasgow.  
H. C.—1055. C.—1055.

**Class 527.—Drakes or Ducks, any other variety, bred in 1921.** [4 entries.]

1061 I. & 1063 II.—W. R. MITCHELL, Elmdean, Kenilworth.  
1062 III.—A. F. M. STEVENSON, Hanley Hall, Hanley Castle.

**Class 528.—Emden Ganders or Geese.** [3 entries.]

1065 I.—ABBOT BROS., Thuxton, Norfolk.  
1066 II. & 1064 III.—MRS. J. S. HAYS, Crosby Lodge, Crosby-on-Eden, Carlisle.

**Class 529.—Toulouse Ganders or Geese.** [5 entries.]

1067 I.—HAROLD CORRIE, Heath House Farm, Lowfield Heath, Surrey.  
1069 II.—ABBOT BROS., Thuxton, Norfolk.  
1070 III.—JAMES S. HEPBURN, Astley, Nuncatton.  
1071 R. N.—MRS. HARRY KENT, Stanbridge Grange, Staplefield, Sussex.  
H. C.—1068.

**Class 530.—White Turkey Cocks or Cockerels.** [3 entries.]

1072 I.—**ABBOT BROS.**, Thuxton, Norfolk.

1074 II.—**MRS. NAGLE**, Pamber Place, Charter Lay, Basingstoke.

**Class 531.—White Turkey Hens or Pullets.** [2 entries.]

1078 I.—**WALTER CAINE**, Ford Manor Dairy Farm, Lingfield.

1075 II.—**ABBOT BROS.**, Thuxton, Norfolk.

**Class 532.—Turkey Cocks, any other variety.** [5 entries.]

1079 I.—**H. J. CATTELL**, The Church Farm, Bickenhill, Hampton-in-Arden.

1077 II.—**THOMAS ABROT**, Wymondham.

1078 III.—**E. THOMSON**, Denzata, Sleaford.

1080 R. N.—**ABROT BROS.**, Thuxton, Norfolk.

H. C.—1081.

**Class 533.—Turkey Hens, any other variety.** [2 entries.]

1082 I.—**ABROT BROS.**, Thuxton, Norfolk.

1083 II.—**THOMAS ABROT**, Wymondham.

**Class 534.—Skebright Bantam Cocks or Cockerels.** [3 entries.]

1084 I.—**J. C. PRESTON**, Bay House, Eble, Lancaster.

1085 II.—**A. R. FISH**, Holme Mead, Hutton, Preston.

1086 III.—**C. L. YOUNG**, 8, Palmer Street, Frome.

**Class 535.—Skebright Bantam Hens or Pullets.** [4 entries.]

1088 I.—**A. R. FISH**, Holme Mead, Hutton, Preston.

1088 II.—**J. C. PRESTON**, Bay House, Eble, Lancaster.

1090 III.—**MISS BETTY BENNETT**, Ridgeway Farm, Nunney, Frome.

1097 R. N.—**LORENZ BENNETT**, The Butts, Frome.

H. C.—1092, 1093, 1097.

**Class 536.—Wyandotte Bantam Cocks or Cockerels.** [8 entries.]

1098 I.—**ISAAC MURKIN**, Nuttal's Park, Ripley, Derby.

1091 II.—**LORD DEWAR**, Homestall Poultry Farm, East Grinstead.

1095 III.—**J. F. ENTWISLE**, Crigglestone Manor, Wakefield.

1098 R. N.—**E. WHITAKER**, Carr's Farm, Hebden Bridge.

H. C.—1092, 1093, 1097.

**Class 537.—Wyandotte Bantam Hens or Pullets.** [13 entries.]

1107 I. & 1104 III.—**ISAAC MURKIN**, Nuttal's Park, Ripley, Derby.

1101 II.—**J. F. ENTWISLE**, Crigglestone Manor, Wakefield.

1106 R. N.—**E. WHITAKER**, Carr's Farm, Hebden Bridge.

H. C.—1098, 1102, 1103, C.—1108, 1109.

**Class 538.—Scotch Grey Bantam Cocks or Cockerels.** [5 entries.]

1116 I. & 1114 R. N.—**J. D. JOHNSTON**, Norwood, Albert Avenue, Sedgley Park, Prestwich.

1113 II. & 1115 III.—**JAMES MCRAE**, 13, Thomson Street, Kilmarnock.

H. C.—1112.

**Class 539.—Scotch Grey Bantam Hens or Pullets.** [5 entries.]

1118 I. & 1119 III.—**JAMES MCRAE**, 13, Thomson Street, Kilmarnock.

1121 II. & 1118 R. N.—**J. D. JOHNSTON**, Norwood, Albert Avenue, Sedgley Park, Prestwich.

H. C.—1117.

**Class 540.—Frizzles Bantam Cocks or Cockerels.** [5 entries.]

1124 I.—**J. F. ENTWISLE**, Crigglestone Manor, Wakefield.

1123 II.—**MAJOR G. W. WHITAKER**, Tredrea, Pernawell.

1126 III.—**GEORGE JONES**, 107, Bute Road, Cardiff.

1122 II. & 1130 R. N.—**SIR CLAUD ALEXANDER**, Br., Faygate Wood, Faygate, Sussex.

H. C.—1126.

**Class 541.—Frizzles Bantam Hens or Pullets.** [5 entries.]

1131 I.—**MAJOR G. W. WILLIAMS**, Tredrea, Pernawell.

1129 II.—**J. F. ENTWISLE**, Crigglestone Manor, Wakefield.

1125 III.—**JAMES A. KELSTY**, Paddock Cottages, Dove Holes, Stockport.

1138 R. N.—**EDWARD G. GLADWIN**, Bryn-Newdd, Poplar Avenue, Chesterfield.

H. C.—1140, 1142.

C.—1132, 1133.

**Class 542.—Old English Game Bantam Cocks or Cockerels.** [11 entries.]

1134 I.—**R. S. MARSDEN**, Chatburn, Clitheroe.

1130 II.—**GORDON LEE**, Wharfedale, Preston, Birkhead.

1137 III.—**JAMES A. KELSTY**, Paddock Cottages, Dove Holes, Stockport.

1138 R. N.—**EDWARD G. GLADWIN**, Bryn-Newdd, Poplar Avenue, Chesterfield.

H. C.—1140, 1142.

C.—1132, 1133.

**Class 543.—Old English Game Bantam Hens or Pullets.** [9 entries.]

1146 I.—**GORDON LEE**, Wharfedale, Preston, Birkhead.

1143 II.—**R. S. MARSDEN**, Chatburn, Clitheroe.

1144 III.—**A. R. CUNLIFFE OWEN**, The Red House, Loughborough.

1149 R. N.—**STONE & RAWSON**, Myrtle Cottage, Heage Road, Ripley, Derby.

H. C.—1145, 1150.

C.—1151.

**Class 544.—Indian Game Bantam Cocks or Cockerels.** [7 entries.]

1154 I. & Special.—JAMES S. HERBURN, Astley, Nuneaton.  
 1155 II.—ALFRED BROWN, Edge Farm, Sefton, via Seaforth, Liverpool.  
 1156 III.—A. H. BROWNSON, 42, Church Street, Nuneaton.  
 1157 R. N.—MELLON & WILKINSON, Hassocks Prize Poultry Farm, Honley, Huddersfield.  
 H. C.—1157.

**Class 545.—Indian Game Bantam Hens or Pullets.** [7 entries.]

1159 I. & Special.—A. H. BROWNSON, 42, Church Street, Nuneaton.  
 1160 II.—JAMES S. HERBURN, Edge Farm, Sefton, via Seaforth, Liverpool.  
 1161 III.—ALFRED BROWN, Edge Farm, Sefton, via Seaforth, Liverpool.  
 1163 R. N.—W. R. BEEK, Phil Farm, Barnsley.  
 H. C.—1160. C.—1165.

**Class 546.—Modern Game Bantam Cocks or Cockerels, any colour.** [6 entries.]

1169 I.—A. H. FISH, Holme Meade, Hutton, Preston.  
 1171 II.—J. GATHERCROLE, The Green, Hincaster, Millthorpe.  
 1167 III. & 1170 R. N.—CAPT. T. M. WHITTAKER, Hendre, Penrhynedraeth.

**Class 547.—Modern Game Bantam Hens or Pullets, any colour.** [5 entries.]

1173 I.—A. R. FISH, Holme Meade, Hutton, Preston.  
 1175 II.—J. GATHERCROLE, The Green, Hincaster, Millthorpe.  
 1172 III.—A. D. RIDGEWAY, Ivy Lodge, Mirfield, York.

**Class 548.—Black or White Rose Comb Bantam Cocks or Cockerels.** [4 entries.]

1178 I.—A. R. FISH, Holme Meade, Hutton, Preston.  
 1177 II.—R. FLETCHER HIBSHAW, Fox Hill, Burton Joyce, Nottingham.  
 1180 III.—J. E. FAWCETT, Abinger Common, Dorking.  
 1179 R. N.—T. H. EGGLESTONE, St. John's Chapel, Wensleydale.

**Class 549.—Black or White Rose Comb Bantam Hens or Pullets.** [5 entries.]

1182 I.—A. R. FISH, Holme Meade, Hutton, Preston.  
 1184 II.—T. A. STOCKING, 1, Salisbury Road, Norwich.  
 1185 III. & 1183 R. N.—MISS PEGGY WILLIAMS, The Carlton, Llanwrtyd Wells.  
 H. C.—1181.

**Class 550.—Barbu d'Anvers Cocks or Cockerels.** [8 entries.]

1199 I.—1188 II., & 1186 III.—MR. & MRS. E. F. HURT, South Darley, Matlock.  
 1189 R. N.—KENNETH WARD, Haxby, York.  
 H. C.—1187, 1191. C.—1192.

**Class 551.—Barbu d'Anvers Hens or Pullets.** [6 entries.]

1197 I. & 1199 II.—KENNETH WARD, Haxby, York.  
 1195 III.—R. FLETCHER HIBSHAW, Fox Hill, Burton Joyce, Nottingham.  
 1194 R. N.—MR. & MRS. E. F. HURT, South Darley, Matlock.  
 H. C.—1196, 1198.

**Class 552.—Cochin or Pekin Bantam Cocks or Cockerels.** [1 entry.]

1200 I.—HENSHAW & CURZON, Victory Poultry Farm, Norman Road, Ripley, Derby.

**Class 553.—Cochin or Pekin Bantam Hens or Pullets.** [2 entries.]

1201 I.—R. ANTHONY, Home Farm, Euxton, Chorley.  
 1202 II.—HENSHAW & CURZON, Victory Poultry Farm, Norman Road, Ripley, Derby.

**Class 554.—Japanese Bantam Cocks or Cockerels.** [8 entries.]

1209 I.—ALFRED E. W. DAREY, Adcote, Shrewsbury.  
 1210 II.—THOMAS BROWN, Brier Cottage, Magdale, Honley, Huddersfield.  
 1208 III.—MR. SMITH, Altadore, Preston.  
 1204 R. N.—J. F. ENTWISLE, Criggstone Manor, Wakefield.  
 H. C.—1203, 1207, 1208.

**Class 555.—Japanese Bantam Hens or Pullets.** [6 entries.]

1212 I.—MRS. SMITH, Altadore, Preston.  
 1216 II.—FREW & LEWIS, The People's Stores, Blaengarw.  
 1214 III. & 1211 R. N.—MAJOR G. T. WILLIAMS, Tredeua, Perranwell.  
 H. C.—1213, 1215.

**Class 556.—Bantam Cocks or Cockerels, any other variety.** [1 entry.]

1217 I.—J. F. ENTWISLE, Criggstone Manor, Wakefield.

**Class 557.—Bantam Hens or Pullets, any other variety.** [2 entries.]

1218 I.—J. F. ENTWISLE, Criggstone Manor, Wakefield.  
 1219 II.—WILLIAM J. DURETT, Verwood, Dorset.

## RABBITS.

Special Prizes were given in the Rabbit Classes by the following Clubs:—National Flemish Giant Rabbit, National English Rabbit, Universal Angora Rabbit, Beveren, National Silver Rabbit, Tau Rabbit, and National Polish Rabbit.

### Belgian Hares.<sup>1</sup>

#### Class 558.—*Belgian Hare Adult Bucks.* [7 entries.]

3 I. (30s.)—HENRY BENNETT, 12, Elton Road, Burton-on-Trent.  
7 II. (20s.)—WILKINSON & BUNTING, 17, Hastings Street, Derby.  
2 IV. (7s. 6d.)—W. J. ANDREWS, 8, Station Road, Swanley Junction.

#### Class 559.—*Belgian Hare Adult Does.* [5 entries.]

8 I. (30s. & R. N. for Champion.)—W. J. ANDREWS, 8, Station Road, Swanley Junction.  
11 II. (20s.)—WILKINSON & BUNTING, 17, Hastings Street, Derby.  
9 IV. (7s. 6d.)—C. CHAMER, 30, Thorpe Street, Shotton Colliery, Sunderland.  
H. C.—10.

#### Class 560.—*Belgian Hare Bucks, under 6 months.* [6 entries.]

13 I. (30s.)—W. J. ANDREWS, 8, Station Road, Swanley Junction.  
15 III. (10s.)—DOLMAN & WILKINSON, Church Street, Hartshorne, Burton-on-Trent.  
H. C.—18.

#### Class 561.—*Belgian Hare Does, under 6 months.* [5 entries.]

19 I. (30s. & Champion.)—W. J. ANDREWS, 8, Station Road, Swanley Junction.  
21 II. (20s.)—A. FANSHAW, 117, Cherrytree Street, Elsecar, Barnsley.  
22 IV. (7s. 6d.)—W. H. HOLLINGSWORTH, Bank Field Farm, Draycott, Derby.

#### Class 562.—*Belgian Hare Bucks, under 4 months.* [6 entries.]

25 I. (30s.)—HENRY BENNETT, 12, Elton Road, Burton-on-Trent.  
29 II. (20s.)—WILKINSON & BUNTING, 17, Hastings Street, Derby.  
H. C.—28.

#### Class 563.—*Belgian Hare Does, under 4 months.* [4 entries.]

33 I. (30s.)—WILKINSON & BUNTING, 17, Hastings Street, Derby.

30 III. (10s.)—W. J. ANDREWS, 8, Station Road, Swanley Junction.

### Flemish Giants.<sup>2</sup>

#### Class 564.—*Flemish Giant Adult Bucks.* [7 entries.]

39 I. (30s. & Special.)—C. WREN, 30, Church Grove, Hampton Wick.  
37 II. (20s.)—T. MAWDSLEY, 54-57, Market Hall, Southport.  
38 III. (10s.)—T. W. SMITH, 152, Acme Lane, Brixton.  
40 IV. (5s.)—BRADLEY & ROBERTSON, 73, Coniston Road, Earlsdon, Coventry.  
36 R. N.—J. HARLING-JONES, The Schools, Fazeley, Tamworth.

#### Class 565.—*Flemish Giant Adult Does.* [4 entries.]

42 I. (30s. & R. N. for Special.)—T. MAWDSLEY, 54-57, Market Hall, Southport.

43 II. (20s.)—C. WREN, 30, Church Grove, Hampton Wick.

#### Class 566.—*Flemish Giant Bucks or Does, under 6 months.* [4 entries.]

48 I. (30s. & R. N. for Special.) & 45 II. (20s.)—C. WREN, 30, Church Grove, Hampton Wick.  
47 III. (10s.)—T. MAWDSLEY, 54-57, Market Hall, Southport.

46 IV. (5s.)—FREDERICK GRIVETT, The Pines, Slindon Common, Arundel.

#### Class 567.—*Flemish Giant Bucks or Does, under 4 months.* [4 entries.]

50 I. (30s. & Special.) & 52 II. (20s.)—C. WREN, 30, Church Grove, Hampton Wick.

49 III. (10s.) & 51 IV. (5s.)—T. MAWDSLEY, 54-57, Market Hall, Southport.

### English.

#### Class 568.—*English Black or Blue Adult Bucks or Does.* [7 entries.]

58 I. (30s. & Special.)—WILLIAM F. E. S. STEPHENS, 17, Elers Road, Ealing, London, W.  
59 II. (20s. & R. N. for Special.)—JAMES EATON, 71, Mill Street, Bolton.  
57 III. (10s.)—JOHN SHERBORNE, 40, Redlands Road, Reading.

54 R. N.—GEORGE A. DRAKE, Western Rabbitries, Braintree.

H. C.—53, 56.

<sup>1</sup> The Fourth Prizes in these Classes were given by the National Belgian Hare Club.

<sup>2</sup> The Newberry Challenge Trophy given by the National Belgian Hare Club for the best Belgian Hare in Classes 558-563.

<sup>3</sup> The Fourth Prizes in these Classes were given by the National Flemish Giant Rabbit Club.

**Class 569.—English Adult Bucks or Does, any other colour. [3 entries.]**

61 I. (30s.)—JOHNSON & BELLAMY, 221, Freeman Street, Grimsby.  
 60 II. (30s.)—H. DITZ, Milburn Road, Ashington.  
 62 III. (10s.)—JAMES EATON, 71, Mill Street, Bolton.

**Class 570.—English Blue or Black Bucks or Does, under 5 months. [5 entries.]**

66 I. (30s.)—WILKINSON & BUNTING, 17, Hastings Street, Derby.  
 67 II. (20s.)—JAMES EATON, 71, Mill Street, Bolton.  
 68 III. (10s.)—JOHN SHERBORNE, 40, Redlands Road, Reading.  
 63 R. N.—MISS ENID MYNORS, Holly Hurst, Mayfield, Ashbourne.  
 H. C.—63.

**Class 571.—English Bucks or Does, any other colour, under 5 months. [5 entries.]**

72 I. (30s. & Special)—JAMES EATON, 71, Mill Street, Bolton.  
 69 II. (30s. & R. N. for Special)—JOHN SHERBORNE, 40, Redlands Road, Reading.  
 70 III. (10s.)—FRED SPRECKLEY, 86, Clifton Road, Darlington.

**Dutch.<sup>1</sup>****Class 572.—Dutch Black or Blue Adult Bucks or Does. [5 entries.]**

75 I. (30s.)—J. W. HANFORD, 50, Thornton Lodge Road, Huddersfield.  
 78 II. (20s.)—H. DITZ, Milburn Road, Ashington.  
 76 III. (15s.)—JOHN W. POTTER, Wharfside View, Leeds Road, Otley.  
 74 IV. (10s.)—A. EARP, 92, Derby Street, Burton-on-Trent.

**Class 573.—Dutch Adult Bucks or Does, any other colour. [7 entries.]**

80 I. (30s.) & 82 III. (15s.)—H. BOSTOCK, 3, Cockpit Hill, Derby.  
 84 II. (20s.)—W. C. YORK, Castlegate, Tickhill, Rotherham.  
 78 IV. (10s.)—J. W. HANFORD, 50, Thornton Lodge Road, Huddersfield.  
 H. C.—81.

**Class 574.—Dutch Black or Blue Bucks or Does, under 4 months. [11 entries.]**

87 I. (30s.)—A. EARP, 92, Derby Street, Burton-on-Trent.  
 89 II. (20s.)—E. S. HANBURY, King's Street, Duffield, Derby.  
 93 III. (15s.)—THOMPSON & SPURGEON, 75, Whitefield Terrace, Heaton, Newcastle-on-Tyne.  
 95 IV. (10s.)—H. BOSTOCK, 3, Cockpit Hill, Derby.  
 90 R. N.—W. H. JACKSON, 157 & 158, Waterloo Street, Burton-on-Trent.  
 H. C.—91.

**Class 575.—Dutch Bucks or Does, any other colour, under 4 months. [7 entries.]**

98 I. (30s.)—EADY BROS., Windsor Street, Burleigh, Leicester.  
 101 II. (20s.)—A. ROBINSON, 6, Park Mount, Armley, Leeds.  
 102 III. (15s.)—W. C. YORK, Castlegate, Tickhill, Rotherham.  
 97 IV. (10s.)—BROOKS & USHERWOOD, 43, Forest Road, Hugglescote, Leicester.  
 H. C.—98.

**Angoras.****Class 576.—Angora Adult Bucks or Does. [7 entries.]**

105 I. (30s. & Special)—J. E. HOLMES, 44, Old Birch, Darwen.  
 108 II. (30s.)—ARTHUR WRIGHT, Villertorpe, Lutterworth.  
 103 III. (10s.)—MISS SAMUEL CLAYTON, 79, Wilton Street, Broadfield, Heywood, Lancs.  
 104 R. N.—ROBERT EDWARDS & SON, 16, Revers Road, Darwen.  
 H. C.—108.

**Class 577.—Angora Bucks or Does, under 4 months. [7 entries.]**

110 I. (30s. & Special)—THOMAS A. FORSTER, 3, Fell View, Ryton-on-Tyne.  
 116 II. (20s.) & 111 R. N.—ARTHUR WRIGHT, Villertorpe, Lutterworth.  
 114 III. (10s.)—J. W. HUTCHINSON, 117, Stone Street, Newcastle-on-Tyne.  
 H. C.—112.

**Beverens.<sup>2</sup>****Class 578.—Blue Beveren Adult Bucks. [9 entries.]**

119 I. (30s.)—MRS. COOMBS, Cathedral School, Llandaff.  
 124 II. (20s.)—MRS. ADA SHIPLEY, Brookside Cottage, Bredasall.  
 120 III. (10s.)—MALCOLM G. JENNINGS, 18, Highworth Road, New Southgate.  
 118 IV. (6s.)—MRS. E. E. BEDFORD, Morley Rectory, Derby.  
 117 V. (4s.)—WILLIAM ADAMS, Oakdene, Loughton.  
 125 R. N.—HAROLD WALKER, Byron House, Wells.

<sup>1</sup> 5s. towards each Third Prize and the Fourth Prize in each Class were given by the United Kingdom Dutch Rabbit Club.

<sup>2</sup> The Fourth and Fifth Prizes in these Classes were given by the Beveren Club.

**Class 579.—Blue Beveren Adult Does.** [10 entries.]

135 I. (30s.)—GEORGE WALKER, 44, Trinity Street, Gainsborough.  
 130 II. (30s.)—S. KIRBY, Oakdale, Fairwater Grove, Llandaff.  
 132 III. (10s.)—ARTHUR MAXWELL, May Cottage, Laleham-on-Thames.  
 126 IV. (6s.)—WILLIAM ADAMS, Oakdene, Loughton.  
 131 V. (4s.)—T. GARRETT KNOTT, Close House, Home Farm, Wylym-on-Tyne.  
 134 R. N.—SERGEANT A. E. ROGERS, R.E., 39, Brighton Street, Redland, Bristol.

**Class 580.—Blue Beveren Bucks or Does, under 4 months.** [25 entries.]

143 I. (30s.)—C. L. KAY, 50, Northumberland Avenue, Gosforth.  
 146 II. (30s.) & 138 V. (4s.)—MRS. CHAVASSE, 56, High Street, Sutton Coldfield.  
 141 III. (10s.)—GEORGE A. FOUNTAIN, Summer Hill, Fakenham.  
 136 IV. (6s.)—WILLIAM ADAMS, Oakdene, Loughton.  
 149 R. N.—DOUGLAS J. NEAME, Riverbank, Laleham-on-Thames.  
 H. C.—151.

**Class 581.—White Beveren Adult Bucks.** [3 entries.]

162 I. (30s.)—LADY LEYLAND-BARRATT, The Manoe House, Torquay.  
 168 II. (30s.)—W. H. WOOD, Yew Tree Cottages, Smalley, Derby.

**Havanas.<sup>1</sup>****Class 584.—Havana Adult Bucks.** [9 entries.]

172 I. (30s.)—J. A. NASH, Model Farm, Neasden.  
 167 II. (30s.)—MRS. CHAVASSE, 56, High Street, Sutton Coldfield.  
 169 III. (10s.)—MRS. M. E. T. HOWDEN, The Nutshell, Horstead, Norwich.  
 173 IV. (6s.)—DOUGLAS J. NEAME, Riverbank, Laleham-on-Thames.  
 166 V. (4s.)—MRS. E. E. BEDFORD, Morley Rectory, Derby.  
 171 R. N.—ARTHUR MAXWELL, May Cottage, Laleham-on-Thames.

**Class 585.—Havana Adult Does.** [9 entries.]

175 I. (30s.)—MRS. E. E. BEDFORD, Morley Rectory, Derby.  
 180 II. (30s.)—J. A. NASH, Model Farm, Neasden.  
 181 III. (10s.)—DOUGLAS J. NEAME, Riverbank, Laleham-on-Thames.  
 176 IV. (6s.)—MRS. CHAVASSE, 56, High Street, Sutton Coldfield.  
 178 V. (4s.)—MISS S. MACFIE, Rowton Hall, Chester.  
 182 R. N.—C. RICHARDSON, Ecclesbourne, Byleet.  
 H. C.—179.

**Class 586.—Havana Bucks or Does, under 4 months.** [11 entries.]

185 I. (30s.)—C. J. DAVIES, Culverlands, Lindfield, Haywards Heath.  
 187 II. (30s.)—J. A. NASH, Model Farm, Neasden.  
 193 III. (10s.)—MRS. L. A. SMITH, 130, Cricklade Street, Cirencester.  
 186 IV. (6s.)—ARTHUR MAXWELL, May Cottage, Laleham-on-Thames.  
 189 V. (4s.) & 184 R. N.—MRS. CHAVASSE, 56, High Street, Sutton Coldfield.  
 H. C.—180.

**Chinchillas.<sup>1</sup>****Class 587.—Chinchilla Adult Bucks.** [9 entries.]

190 I. (30s.)—DAVID W. IRVING, 11, Chambers Road, Southport.  
 195 II. (30s.)—LORD DEWAR, Homestall, Ashurst Wood, East Grinstead.  
 200 III. (10s.)—A. R. COULIFLE OWEN, The Red House, Loughborough.  
 194 IV. (6s.)—MRS. COOMBS, Cathedral School, Llandaff.  
 197 V. (4s.)—MRS. LEIGHMAN, Broomrigg, Sarisbury Green, Southampton.  
 202 R. N.—MRS. G. M. SOAMES, Long Buckley Wharf, Rugby.

**Class 588.—Chinchilla Adult Does.** [7 entries.]

204 I. (30s. & R. N. for Special)—DAVID W. IRVING, 11, Chambers Road, Southport.  
 208 II. (30s.)—ARTHUR MAXWELL, May Cottage, Laleham-on-Thames.  
 206 III. (10s.)—S. KIRBY, Oakdale, Fairwater Grove, Llandaff.  
 207 IV. (6s.)—MISS S. MACFIE, Rowton Hall, Chester.  
 205 V. (4s.)—C. L. KAY, 50, Northumberland Avenue, Gosforth.

**Class 589.—Chinchilla Bucks or Does, under 4 months.** [8 entries.]

212 I. (30s. & Special)—DAVID W. IRVING, 11, Chambers Road, Southport.  
 216 II. (30s.)—ARTHUR WRIGHT, Villershore, Litterworth.  
 211 III. (10s.)—LORD DEWAR, Homestall, Ashurst Wood, East Grinstead.  
 214 IV. (6s.)—E. PIERCEY, 49, Traffic Street, Derby.  
 215 V. (4s.) & 217 R. N.—MRS. G. M. SOAMES, Long Buckley Wharf, Rugby.

<sup>1</sup> The Fourth and Fifth Prizes in these Classes were given by the Beveren Club.

**Silvers.**

**Class 590.—Silver Grey Adult Bucks or Does. [13 entries.]**

227 I. (20s.)—Special, & R. N. for Champion.—GEORGE SHERIFF, 16, Gwendolen Road, Leicester.  
 218 II. (20s.)—BELL & HEATON, 116, Belgrave Road, Oldham.  
 229 III. (10s.)—WILLIAM WILSON, 39, Queen Street, Derby.  
 222 R. N.—SAMUEL LAMB, 25, Peel Green Road, Barton-on-Irwell, Patricroft, Manchester.  
 H. C.—220. C.—219.

**Class 591.—Silver Grey Bucks or Does, under 5 months. [7 entries.]**

238 I. (30s. & Special) & 233 II. (20s.)—COOK & OUGHTRED, Springfield, West Hartlepool.  
 232 III. (10s.)—BRIERLEY & OWEN, 23, Park Road, Leek.  
 231 R. N.—BELL & HEATON, 116, Belgrave Road, Oldham.  
 H. C.—235.

**Class 592.—Silver Fawn Adult Bucks or Does. [6 entries.]**

239 I. (30s. & Champion)—J. W. BROWN, 8, Graham Terrace, New Shildon.  
 238 II. (30s.)—BELL & HEATON, 116, Belgrave Road, Oldham.  
 240 III. (10s.)—ALF. ROSE, Lindum Rabbitry, Brigg.  
 241 R. N.—HAROLD WALKER, Byron House, Wells.  
 H. C.—242.

**Class 593.—Silver Fawn Bucks or Does, under 5 months. [6 entries.]**

243 I. (30s. & Champion)—J. W. BROWN, 8, Graham Terrace, New Shildon.  
 247 II. (30s.)—ALF. ROSE, Lindum Rabbitry, Brigg.  
 248 III. (10s.)—HAROLD WALKER, Byron House, Wells.  
 244 R. N.—J. W. BROWN, 8, Graham Terrace, New Shildon.  
 H. C.—245.

**Class 594.—Silver Brown Adult Bucks or Does. [4 entries.]**

251 I. (30s. & R. N. for Special)—WILLIAM JAMESON, Alverton, Headless Cross, Redditch.  
 252 II.—HAROLD WALKER, Byron House, Wells.  
 249 III.—BELL & HEATON, 116, Belgrave Road, Oldham.  
 250 R. N.—PERCY CRAIBER, 248, Western Road, Sheffield.

**Class 595.—Silver Brown Bucks or Does, under 5 months. [4 entries.]**

255 I. (30s.)—WILLIAM JAMESON, Alverton, Headless Cross, Redditch.  
 256 II. (20s.) & 253 III. (10s.)—HAROLD WALKER, Byron House, Wells.  
 254 R. N.—JOSEPH CROFTS, The Green, Smalley, Derby.

**Tans.**

**Class 597.—Black Tan Adult Bucks or Does. [5 entries.]**

257 I. (30s. & Special)—S. ALLWOOD, 96, Crewe Street, Derby.  
 260 II. (20s.)—THOMAS FEARN, Dunham Street, Greenwich, Ripley, Derby.  
 261 III. (10s.)—MRS. H. HILL, 356, Main Road, Barnall, Sheffield.  
 258 R. N.—HAROLD & ROBERTSON, 75, Coniston Road, Earlsdon, Coventry.  
 H. C.—259.

**Class 598.—Blue Tan Adult Bucks or Does. [1 entry.]**

262 II. (20s.)—J. H. EVANS, Harrington House, Cheltenham.

**Class 599.—Black Tan Bucks or Does, under 5 months. [5 entries.]**

264 I. (30s.) & Special—JAMES W. BELL, 5, Moor View, Thorley, near Wheatley Hill.  
 265 II. (20s.)—G. H. DRABBLE, Glen Derwent, Snitterton Road, Matlock.  
 267 III. (10s.)—ROBERT JAMESON, Alverton, Headless Cross, Redditch.  
 266 R. N.—S. ALLWOOD, 96, Crewe Street, Derby.  
 H. C.—268.

**Class 600.—Blue Tan Bucks or Does, under 5 months. [4 entries.]**

268 I. (30s.) & 271 II. (20s.)—G. H. DRABBLE, Glen Derwent, Snitterton Road, Matlock.  
 270 III. (10s.)—ROBERT JAMESON, Alverton, Headless Cross, Redditch.  
 269 R. N.—J. H. EVANS, Harrington House, Cheltenham.

**Polish.**

**Class 601.—Polish Bucks or Does, under 6 months. [10 entries.]**

278 I. (30s.) & Special—DR. ALICE WATSON, Gledynne, Preston Hill, Birkenhead.  
 276 II. (20s.)—ALF. ROSE, Lindum Rabbitry, Brigg.  
 273 III. (10s.)—H. DANCER, Church Street, Leatheshead.  
 274 IV. (5s.) & 276 R. N.—R. PLEASCHER HAWKSHAW, Fox Hill, Burton Joyce, Nottingham.  
 H. C.—280, 281.

<sup>1</sup> Given by the National Polish Rabbit Club.

**Giant Blue St. Nicholas.**

Class 602.—*Giant Blue St. Nicholas Adult Bucks.* [2 entries.]  
 282 II. (2s.)—MR. & MRS. E. F. HURT, South Darley, Matlock.  
 Class 603.—*Giant Blue St. Nicholas Adult Does.* [3 entries.]  
 284 I. (3s.) & 286 III. (10s.)—MR. & MRS. E. F. HURT, South Darley, Matlock.  
 Class 604.—*Giant Blue St. Nicholas Bucks or Does, under 5 months.* [2 entries.]  
 287 I. (3s.) & 288 III. (10s.)—MR. & MRS. E. F. HURT, South Darley, Matlock.

**FARM AND DAIRY PRODUCE OF THE  
UNITED KINGDOM.**

**Butter.**

Class 605.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Channel Island, Devon or South Devon Cattle and their crosses.* [15 entries.]  
 11 I. (2s.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.  
 13 II. (2s.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 12 III. (1s.)—MISS ANNIE PRICHARD, The Dairy, Welbeck, Worksop.  
 4 R. N.—CAPTAIN E. W. S. FOLJAMBE, Osberton, Worksop.  
 H. C.—7, 8. C.—2, 5, 9.  
 Class 606.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of cattle of any breed or cross other than those mentioned in Class 605.* [17 entries.]  
 26 I. (2s.)—MISS S. H. ROBINSON, Red House Farm, Liverton, Loftus.  
 23 II. (2s.)—MISS M. E. GORDON, The High Class Dairy, 51a, Ashby Road, Loughborough.  
 20 III. (1s.)—THE EGGINTON DAIRY CO., LTD., Egginton Junction, Derby.  
 24 R. N.—MRS. W. E. MUDD, Slade House, Darley, Harrogate.  
 H. C.—17, 29. C.—25.  
 Class 607.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of Channel Island, Devon or South Devon Cattle and their crosses.* [18 entries.]  
 44 I. (2s.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.  
 47 II. (2s.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 35 III. (1s.)—CAPTAIN E. W. S. FOLJAMBE, Osberton, Worksop.  
 46 R. N.—MISS ANNIE PRICHARD, The Dairy, Welbeck, Worksop.  
 H. C.—38, 40. C.—34, 36, 42, 48, 50.  
 Class 608.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of cattle of any breed or cross other than those mentioned in Class 607.* [17 entries.]  
 62 I. (2s.)—MISS S. H. ROBINSON, Red House Farm, Liverton, Loftus.  
 65 II. (2s.)—MRS. SPRINGER, F. W. Gilbert, Ltd., Burnaston Dairy, Derby.  
 56 III. (1s.)—THE EGGINTON DAIRY CO., LTD., Egginton Junction, Derby.  
 60 R. N.—MRS. W. E. MUDD, Slade House, Darley, Harrogate.  
 H. C.—55. C.—51, 52, 58, 59, 66.  
 Class 609.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.* [12 entries.]  
 75 I. (2s.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.  
 77 II. (2s.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 74 III. (1s.)—MRS. W. E. MUDD, Slade House, Darley, Harrogate.  
 72 R. N.—MISS M. E. GORDON, The High Class Dairy, 51a, Ashby Road, Loughborough.  
 H. C.—68. C.—70.  
 Class 610.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds, and packed in non-returnable boxes for transmission by rail or parcel post.* [6 entries.]  
 80 I. (2s.)—THE EGGINTON DAIRY CO., LTD., Egginton Junction, Derby.  
 85 II. (2s.)—JOHN Q. ROWETT, Ely Place, Frant, Sussex.  
 83 III. (1s.)—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks.  
 84 R. N.—MISS S. H. ROBINSON, Red House Farm, Liverton, Loftus.  
 H. C.—82.

**Cheese.**

*Made in 1921.*

**Class 611.—Two Cheshire Cheeses (Coloured), not less than 40 lb. each.** [17 entries.]

91 I. (£5.)—SAMUEL DUTTON, Oak Farm, Haughton, Tarporley.  
98 II. (£3.)—F. A. MOORE, Checkley, Nantwich.  
101 III. (£2.)—GEORGE TATE, Chapel House Farm, Wervin, Chester.  
102 R. N.—GEORGE WATSON, Knightley, Eccleshall, Staffs.  
H. C.—99. C.—88.

**Class 612.—Two Cheshire Cheeses (Uncoloured), not less than 40 lb. each.** [17 entries.]

116 I. (£5.)—ROBERT W. PARKER, Cooks Pit, Faddiley, Nantwich.  
110 II. (£3.)—W. H. HOBSON, Woodhey Hall, Faddiley, Nantwich.  
119 III. (£2.)—GEORGE WATSON, Knightley, Eccleshall, Staffs.  
108 R. N.—SAMUEL DUTTON, Oak Farm, Tarporley.  
H. C.—106. C.—115.

**Class 613.—Two Cheddar Cheeses, not less than 50 lb. each.** [6 entries.]

122 I. (£5.)—P. H. FRANCIS, Miller's Farm, Upton Noble, Bruton.  
120 II. (£2.)—T. BOULD, F. W. Gilbert, Ltd., Ellastone, Ashbourne.  
124 III. (£2.)—H. H. PICKFORD, Manor Farm, Patney, Wills.  
121 R. N.—THE CHEDDAR VALLEY DAIRY CO., LTD., Rooksbridge Factory, Axbridge.

**Class 614.—Two Cheddar Truckles.** [4 entries.]

129 I. (£4.)—H. H. PICKFORD, Manor Farm, Patney, Wills.  
127 II. (£2.)—P. H. FRANCIS, Miller's Farm, Upton Noble, Bruton.  
126 III. (£1.)—T. BOULD, F. W. Gilbert, Ltd., Ellastone, Ashbourne.  
128 R. N.—MISS THOMAS, F. W. Gilbert, Ltd., Ecton, Wetton, Ashbourne.  
H. C.—130.

**Class 615.—Two Staffordshire or Derbyshire Cheeses.** [15 entries.]

138 I. (£4.)—WILLIAM FORD, Factory House, Brailsford, Derby.  
135 II. (£2.)—THE CHEDDAR VALLEY DAIRY CO., LTD., Rooksbridge Factory, Axbridge.  
142 III. (£1.)—MISS THOMAS, F. W. Gilbert, Ltd., Ecton, Wetton, Ashbourne.  
134 R. N.—T. BOULD, F. W. Gilbert, Ltd., Ellastone, Ashbourne.  
H. C.—136.

**Class 616.—Two Leicestershire Cheeses.** [3 entries.]

146 I. (£4.)—MISS CHESEMAN, F. W. Gilbert, Ltd., Bottesford, Notts.  
145 II. (£2.)—MISS BRYNON, F. W. Gilbert, Ltd., Derby Road, Loughborough.  
147 III. (£1.)—THE EGGINTON DAIRY CO., LTD., Egginton Junction, Derby.

**Class 617.—Two Stilton Cheeses.** [8 entries.]

148 I. (£4.)—MISS BENYON, F. W. Gilbert, Ltd., Derby Road, Loughborough.  
154 II. (£2.)—MISSES M. F. & J. WEBSTER, Hatton Lodge, Nether Broughton, Melton Mowbray.  
153 III. (£1.)—FRED WEBSTER, Shoby Priory, Melton Mowbray.  
155 R. N.—WEBSTER & RICHARDSON, The Dairy, Twyford, Melton Mowbray.

**Class 618.—Two Wensleydale Cheeses (Stilton Shape).** [4 entries.]

157 I. (£4.)—MISS RACHEL JAMES, Llancayo, Usk, Mon.  
159 II. (£2.)—ALFRED ROWNTREE, The Dairy, Coverham, Middleham.  
158 III. (£1.)—DORIS S. LEE, Grove Hall Dairy, Knottingley.

**Class 619.—Two Caerphilly Cheeses.** [7 entries.]

161 I. (£4.)—MISS CILIAN EDWARDS, Cefn Poeth Farm, Lanvedd, Cardiff.  
162 II. (£2.)—MISS RACHEL JAMES, Llancayo, Usk, Mon.  
165 III. (£1.)—UNITED DAIRIES (WHOLESALE), LTD., Wells.  
160 R. N.—THE CHEDDAR VALLEY DAIRY CO., LTD., Rooksbridge Factory, Axbridge.

**Class 620.—Two Small Cheeses, not exceeding 6 lb. each, of Cheddar or Cheshire character.** [14 entries.]

172 I. (£4.)—MRS. E. M. EVANS, Welshes, Clatworthy, Wiveliscombe.  
174 II. (£2.)—S. FAULKNER, Home Farm, Stocklinch, Ilminster.  
168 III. (£1.)—LT.-COL. D. F. BOLES, Wattis House, Bishops Lydeard, Taunton.  
171 R. N.—C. H. DAHINET, Hill Farm, Bovington, Ilminster.  
H. C.—175. C.—167.

**Class 621.—Two Small Cheeses, not exceeding 6 lb. each, of Stilton or Wensleydale character.** [9 entries.]

186 I. (£3.)—MISS RACHEL JAMES, Llancayo, Usk, Mon.  
189 II. (£2.)—ALFRED ROWNTREE, The Dairy, Coverham, Middleham.  
188 III. (£1.)—MISS S. H. ROBINSON, Red House Farm, Lofferton, Loftus.  
187 R. N.—MRS. R. M. METCALFE, Hundah, Barnard Castle.

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**Class 622.—Two Soft Cheeses, made from Whole Milk.** [4 entries.]

190 I. (£3.)—MISS ELSIE G. COOK, Heath House, Tettenhall, Oxon.  
 192 II. (£2.)—MRS. W. HOWARD PALMER, Murell Hill, Blinfold, Berks.  
 191 III. (£1.)—MISS M. E. GORDON, The High Cliff Dairy, 51A, Ashby Road, Loughborough.  
 193 R. N.—HENRY PASS, Bilbrough, Shreby, Notts.

**Class 623.—Two Soft Cheeses, made from Cream without the addition of Rennet.** [11 entries.]

202 I. (£3.)—MISS ANNE PRICHARD, The Dairy, Welbeck, Worksop.  
 203 II. (£2.)—ALFRED RONTHREE, The Dairy, Coverham, Middleham.  
 200 III. (£1.)—MRS. W. HOWARD PALMER, Murell Hill, Blinfold, Berks.  
 194 R. N.—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos.  
 H. C.—304. C.—195, 196, 198.

**Cider.**

**Class 624.—Six Bottles of Dry Cider made in 1920.** [7 entries.]

211 I. (£3.) 210 III. (£1.) & 209 R. N.—RIDLER & SON, Clehonger Manor, Hereford.  
 208 II. (£2.)—JOSEPH M. PARRY & SON, LTD., Westbury Cider Works, Leominster.  
 H. C.—200.

**Class 625.—Six Bottles of Sweet Cider, made in 1920.** [9 entries.]

220 I. (£3 & R. N. for Champion,<sup>1</sup>) & 210 R. N.—RIDLER & SON, Clehonger Manor, Hereford.  
 213 II. (£2.)—CAPT. W. W. CRAWSHAY, Hempnall Cider Factory, Norwich.  
 217 III. (£1.)—JOSEPH M. PARRY & CO., LTD., Westbury Cider Works, Leominster.  
 H. C.—216.

**Class 626.—Six Bottles of Cider, made previous to 1920.** [14 entries.]

231 I. (£3 & Champion,<sup>1</sup>) 234 II. (£2.) & 232 R. N.—RIDLER & SON, Clehonger Manor, Hereford.  
 223 III. (£1.)—SIR IAN HEATHCOAT AMORY, BT., Knightshayes, Tiverton, Devon.  
 H. C.—221. C.—224.

**Bottled Fruits and Vegetables.**

**Class 627.—Six Bottles of Fruit, of not less than Four Varieties.** [5 entries.]

230 I. (£3.)—G. W. WEATHERILL, Belmont, Stokesley, Yorks.  
 233 II. (£2.)—WILLIAM PARLOUR, Waterside, Crot, Darlington.  
 237 III. (£1.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.  
 238 R. N.—MRS. A. C. EDMONDS, Cox Hill Farm, Chobham, Surrey.

**Class 628.—Six Bottles of Soft Fruit, of not less than Four Varieties.** [3 entries.]

242 I. (£3.)—G. W. WEATHERILL, Belmont, Stokesley, Yorks.  
 241 II. (£2.)—WILLIAM PARLOUR, Waterside, Crot, Darlington.  
 240 III. (£1.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

**Class 629.—Four Bottles of Fruit, of not less than Three Varieties.** [2 entries.]

244 I. (£0s.)—G. W. WEATHERILL, Belmont, Stokesley, Yorks.  
 243 II. (£0s.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

**Class 630.—Four Bottles of Fruit, of not less than Three Varieties.** [2 entries.]

246 I. (£0s.)—G. W. WEATHERILL, Belmont, Stokesley, Yorks.  
 245 II. (£0s.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

**Class 631.—Two Bottles of Rhubarb.** [1 entry.]

247 I. (£1.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

**Bottled Vegetables.**

**Class 632.—Six Bottles of Vegetables, of not less than Four Varieties.** [2 entries.]

248 I. (£0s.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

249 II. (£0s.)—WILLIAM PARLOUR, Waterside, Crot, Darlington.

**Wool.<sup>2</sup>**

*Of 1921 Clip.*

**Class 633.—Three Fleeces of Oxford Down Wool.** [5 entries.]

253 I. (£3.) & 254 III. (£1.)—H. W. STILGOE, The Grounds, Adderbury, Baubury.  
 250 II. (£2.) & 251 R. N.—HENRY AKERS & CO., Moat House, Black Bourton, Clanfield, Oxon.

<sup>1</sup> Challenge Cup given by the Cider Growers of the West of England for the best exhibit of Cider in Classes 624-626.

<sup>2</sup> The Second and Third Prizes in Classes 633-649 were given by the respective Flock Book Societies.

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**Class 634.—Three Fleeces of Shropshire Wool.** [9 entries.]

261 I. (23.)—N. J. NUNNERLEY, Tern Hill House, Market Drayton.  
250 II. (23.)—CHARLES L. COXON, Milton, Kingsland, Herefordshire.  
256 III. (F1.)—R. E. BIRCH, Maes Elwy, St. Asaph.  
262 R. N.—E. CRAIG TANNER, Bilton-on-Severn, Shrewsbury.

**Class 635.—Three Fleeces of Southdown Wool.** [3 entries.]

266 I. (23.) & 265 II. (F2.)—LADY LUDLOW, Luton Hoo, Beds.  
264 III. (F1.)—THE REV. C. H. BROCKLEBANK, Bartlow House, Cambridge.

**Class 636.—Three Fleeces of Hampshire Down Wool.** [3 entries.]

269 I. (23.)—WILLIAM TODD, Little Ponton Grange, Grantham.  
267 II. (22.) & 268 III. (F1.)—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.

**Class 637.—Three Fleeces of Suffolk Wool.** [8 entries.]

274 I. (23.)—FRED M. L. SLATER, Pound Farm, Weston Colville, Cambs.  
271 II. (22.)—THE HOLLESLEY RAY LABOUR CO-OP., Hollesley, Suffolk.  
270 III. (F1.)—THE RT. HON. SIR ERNEST CASSEL, Moulton Paddocks, Newmarket.  
273 R. N.—FRANK E. SLATER, Weston Colville Hall, Cambs.

**Class 638.—Three Fleeces of Dorset Horn Wool.** [2 entries.]

276 I. (23.) & 277 II. (F2.)—ALFRED READ, Lower Farm, Hilton, Blandford.

**Class 639.—Three Fleeces of Ryeland Wool.** [5 entries.]

282 I. (23.) & 281 II. (F2.)—DAVID J. THOMAS, Talachdu, Brecon.  
280 III. (F1.)—JOHN Q. BOWETT, Ely Place, Frant, Sussex.

**Class 640.—Three Fleeces of Kerry Hill (Wales) Wool.** [2 entries.]

283 I. (23.)—WILLIAM ALDERSHOF, Glannmiheli, Kerry, Mont.  
284 II. (F2.)—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.

**Class 641.—Three Fleeces of Leicester Wool.** [2 entries.]

286 I. (23.) & 285 II. (F2.)—GEORGE HARRISON, Gainford Hall, Darlington.

**Class 642.—Three Fleeces of Border Leicester Wool.** [3 entries.]

288 I. (23.) & 289 II. (F2.)—ROBERT GRAHAM, Auchengassie, Twynholm.  
287 III. (F1.)—W. J. GLAHOME, Little Houghton, Lebury.

**Class 643.—Three Fleeces of Wensleydale Wool.** [6 entries.]

290 I. (23.) & 291 II. (F2.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirby Lonsdale.  
295 III. (F1.)—JOHN A. WILLIS, Manor House, Carperty, Yorks.

**Class 644.—Three Fleeces of Kent or Romney Marsh Wool, from Rams of any age.** [7 entries.]

299 I. (23.)—L. H. & G. W. FINN, Westwood Court, Faversham.  
301 II. (F2.)—J. EGERTON QUESTED, The Firs, Chertsey, Kent.  
298 III. (F1.)—ARTHUR FINN, Westbrooke House, Lydd, Kent.  
300 R. N.—WALTER MISKIN, White Hall, Hoo, Rochester.

**Class 645.—Three Fleeces of Kent or Romney Marsh Wool, from Ewe Togs.** [6 entries.]

305 I. (23.)—L. H. & G. W. FINN, Westwood Court, Faversham.  
307 II. (F2.)—J. EGERTON QUESTED, The Firs, Chertsey, Kent.  
308 III. (F1.)—ASHLEY STEVENS, Luddenham Court, Faversham.  
303 R. N.—H. B. AMOS, Ripton, Ashford, Kent.

**Class 646.—Three Fleeces of Kent or Romney Marsh Wool, excluding Rams and Ewe Togs.** [6 entries.]

311 I. (23.) & 312 II. (F2.)—L. H. & G. W. FINN, Westwood Court, Faversham.  
314 III. (F1.)—J. EGERTON QUESTED, The Firs, Chertsey, Kent.

**Class 647.—Three Fleeces of Cotswold Wool.** [4 entries.]

317 I. (23.)—WILLIAM GARNET, Abingdon, Fairford, Glos.  
315 II. (F2.)—LT-COL E. P. BRASSEY, The Manor House, Upper Slaughter, Glos.  
316 III. (F1.)—THOMAS BROWN & SON, Marham Hall, Downham, Norfolk.

**Class 648.—Three Fleeces of Dartmoor Wool.** [2 entries.]

320 I. (23.) & 319 II. (F2.)—JOHN H. GLOVER, Combe Martin, S. Devon.

**Class 650.—Three Fleeces of First Cross of any Long and Short Wool.** [2 entries.]

322 I. (23.)—R. B. GRIBBLE, Gabriele Manor, Edenbridge.  
321 II. (F2.)—W. J. GLAHOME, Little Houghton, Lebury.

## HORTICULTURAL EXHIBITION.

### Class 1.—Groups of Miscellaneous Plants. [2 entries.]

1 I. (245.)—JAMES CYPHER & SONS, Cheltenham.  
2 II. (240.)—W. A. HOLMES, West End Nurseries, Chesterfield.

### Class 2.—Collections of Orchids. [1 entry.]

3 I. (212.)—JAMES CYPHER & SONS, Cheltenham.

### Class 3.—Collections of *Delphiniums*. [1 entry.]

4 I. (26.)—BLACKMORE & LANGDON, Twerton-on-Avon, Bath.

### Class 4.—Groups of Tuberous Begonias in Pots. [3 entries.]

5 I. (230.)—BLACKMORE & LANGDON, Twerton-on-Avon, Bath.

### Class 5.—Collections of Hardy Perennial Plants and Cut Blooms. [4 entries]

7 I. (230.)—G. GIBSON & CO., Leamington Bar, Bedale.  
6 II. (225.)—ARTINDALE & SONS, Nether Green Nurseries, Sheffield.  
8 III. (220.)—HARNESS & SONS, Grange Nurseries, Bedale.

### Class 6.—Collections of Cut Sprays of Carnations. [3 entries.]

10A (Equal Prize)—H. LAKEMAN, Thornton Heath.  
10B { of £7 10s.—C. WALL, Melrose Nurseries, Bath.

### Class 7.—Collections of Cut Roses. [3 entries.]

11 I. (215.)—ALEX. DICKSON & SONS, Howmark, Newtonards, Co. Down, Ireland.  
38 II. (210.)—THOMAS ROBINSON, Porchester Nurseries, Nottingham.  
12 III. (27.)—WILLIAM LOWE & SON, Beeston, Notts.

### Class 8.—Collections of Sweet Peas. [3 entries.]

13A I. (210.)—ALEX. DICKSON & SONS, Howmark, Newtonards.  
13 II. (28.)—E. W. KING & CO., Coggeshall, Essex.  
13B III. (26.)—MRS. D. PIDCOCK, Ruddington, Nottingham.

### Exhibits not for Competition.

#### Large Gold Medals to:—

14 ALLWOOD BROS., Wivelsfield Nursery, Haywards Heath.  
23 SUTTON & SONS, Reading.  
34 WATERER, SON & CRUSE, Bagshot, Surrey.

#### Gold Medals to:—

15 LADY ANN, West Parkfields, Derby.  
19 ALEX. DICKSON & SONS, Howmark, Newtonards.  
35 KING ACRE NURSERIES, Hereford.  
41 EDWARD WEBB & SONS, Worsley, Stourbridge.

#### Silver-Gilt Medals to:—

21 H. W. ELLISON, Bull Street, West Bromwich.  
27 WILLIAM LOWE & SON, Beeston, Notts.  
40 PERD & SON, West Norwood.

#### Silver Medals to:—

16 BROADHEAD & SON, Thongsbridge, Huddersfield.  
26 STUART LOW & CO., Bush Hill Park, Enfield.  
28 LAXTON BROS., Bedford.  
31 JOGOON & SONS, LTD., Southampton.  
33 MISS A. THOMSON, Alfred Road, Handsworth.  
36 H. LAKEMAN, Thornton Heath.  
37 A. PINESTON JONES, Micklover House, Derby.  
37A ENGELMANN & CO., Saffron Walden.  
38 THOMAS ROBINSON, Porchester Nurseries, Nottingham.  
42 WILLIAM SYDENHAM, Melbourne, Derby.

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